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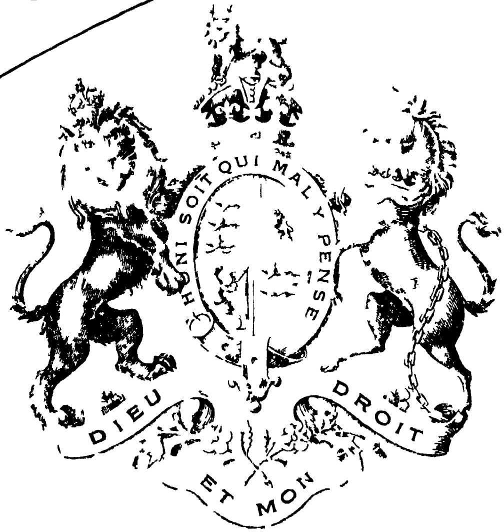

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AGRICULTURAL RESEARCH INSTITUTE
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THE JOURNAL
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VOLUME 83

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All parcels and correspondence relative to the binding of back numbers of the Journal should be addressed (postage or carriage prepaid) to Messrs. BUTLER & TANNER, The Selwood Printing Works, Frome, Somerset.

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„ 4.	1843 ..	„	IV.	„ I. (xi.) and II. (xii.)
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„ 10.	1849 ..	„	X.	„ I. (xxiii.) and II. (xxiv.)
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A. H. Thorold.

JOURNAL
OF THE
ROYAL AGRICULTURAL SOCIETY OF ENGLAND

SIR JOHN HENRY THOROLD, BART.

Sir John Thorold was the head of a family which has been connected with the County of Lincoln for many centuries; in fact, it may be said that the connection dates from Saxon days. A baronetcy was conferred upon the family in the year 1642, of which the subject of this notice was the twelfth holder. He was born in 1842 and was educated at Eton, and subsequently entered the army as a lieutenant in the 17th Foot, the Leicestershire Regiment. In 1865 he was returned to Parliament in the Conservative interest as member for Grantham, and continued in the House till 1868. In the meantime he had succeeded his father (1866) in the baronetcy and in the family estates at Syston, near Grantham.

From this time onward until the day of his death he devoted himself to public administrative work and to everything which might lead to the advancement of British agriculture. A considerable land-owner he also farmed on an extensive scale, and was a pioneer in agricultural experimental work, carried out systematically in the interests of his tenants and neighbours. He took a prominent part in the formation of the Lincoln Longwool Sheep Breeders' Association, acting as its President for many years, and he himself bred a flock which, though never represented in the Show-ring, did well at the annual sales of the Association. He was associated with Mr. Faunce de Laune, Mr. William Carruthers and others in the early work on the testing and improvement of agricultural seeds, which resulted in the inauguration of the scheme by which the systematic analysis of seeds is still carried out by the Society for the benefit of its members.

On the passing of the Local Government Act, 1888, it was natural that Sir John Thorold should play a prominent part in its administration, and he became first, Vice-Chairman, and subsequently, Chairman of the Kesteven County Council, serving in these offices for an unbroken period of twenty-five years. On his retirement his portrait, painted by William Orpen, R.A., was presented to him by his colleagues in recognition of his life-long services to his county. His activities in local affairs extended also in many other directions, and amongst the many positions that he filled was that of Colonel of the 2nd V.B. Lincolnshire Regiment, a command that he held for twenty-two years. He was a Deputy Lieutenant of Lincolnshire, and filled the office of High Sheriff of the county in 1876. On the formation of the Lawes Agricultural Trust, created to administer the bequest of Sir John Lawes, he became its first Chairman, and in many minor directions he displayed his activity in the public service and gave continuous evidence of the confidence and trust that was universally reposed in him.

His connection with the Royal Agricultural Society began in the year 1868, in which he was elected member, and he became a member of Council in 1881, serving the Society in this capacity for an unbroken period of forty-one years. He was elected Governor in 1889, Vice-President in the same year, and Trustee in 1899. In 1895 he was President of the Society, the Show being held at Darlington in that year for the first time. He filled the Presidential chair again in 1905 for a few months when, owing to a change in the date for holding the Annual Meeting of the Society, there was a short hiatus between two terms of office.

During his long connection with the direction of the affairs of the Society Sir John Thorold rendered invaluable services in almost every department of its work. In 1887 he was Chairman of a special Committee set up to go into many questions of finance and other important matters, which became known as "Sir John Thorold's Committee," and he was for many years chairman of the Committee of Selection. From his deep interest in education and research it was natural that he should early have become associated with the work of the Journal and Education Committee, and he presided over its meetings for twenty-five years.

In his private capacity Sir John Thorold was a man of great personal charm. He was a keen sportsman, particularly as regards shooting and fishing. A fine scholar (Cambridge in 1894 conferred upon him the honorary degree of LL.D.) he was especially interested in the French language, and up to the end of his life he was a diligent reader of the periodical literature of that country, particularly of publications relating to experimental and research work in agriculture. It may truly be stated that his life was an example of everything that is best in the English landlord tradition—a tradition that changing times are fast breaking through. Living year in, year out, amongst his tenants and neighbours in the place where his ancestors for many generations had lived before him, he devoted all his energies to the faithful and unostentatious execution of the duties which he felt that his position entailed upon him. It is necessary that old institutions should give place to new, but the English country-side will be the poorer if a new social order should ever bring about the disappearance of leaders such as he showed himself to be.

Sir John Thorold married, in 1869, the Hon. Henrietta Alexandrina Willoughby, eldest daughter of the eighth Lord Middleton, who, together with two sons and two daughters, survives him.

CECIL T. PARKER.

The Grove,
Corsham.

COMMODITY PRICES AND FARMING POLICY.

THE agricultural depression which set in with the 'eighties and reached its low-water mark in 1894 (when good wheat was sold by many farmers for less than 20*s*. per quarter) may be said to have endured for about five and twenty years, for a definite and steady recovery is to be noted from the year 1906. It is common knowledge that the effect on agriculture of the Great War was to speed up the rise in prices of produce which had already begun, and the years 1915 to 1920, both inclusive, mark the period of greatest prosperity which the present generation of farmers has known. The pendulum is swinging back again rapidly and whilst prices are still far above those prevailing in the worst years of the depression, costs likewise are much higher than in those days, so that the positions of the farmer then and now [1] are by no means so dissimilar as might appear. Whether the present conditions are likely to continue is a question which each one must answer for himself; better times may result when the state of chaos prevailing amongst nations has ceased, and Britain is no longer the dumping ground of the world's surplus food production, or foreign competition without artificial restraint may always prevent any material recovery from the present position. But the farmer and the farm-worker have got to live *to-day*, so that alike to the man who is expecting better conditions a few years hence and to the one who sees no hope of any change, some consideration of the relation of prices of produce to farming policy may be acceptable.

---

[1] July, 1922.

At the outset it is necessary to emphasise the fact that the interests of the community may be widely divergent from those of the industry. What the community needs is maximum production of food for its sustenance and of raw material for its manufacturers, together with a big rural population. What the agricultural industry wants is a good return on farming capital and a high rate of wages to the farm worker. The interests of the farmer and his men are identical, but it is too often forgotten that good profits and high wages have no necessary connection with high output.

Much of the advice given to farmers, and this by their well-wishers as often as by their critics, takes the form of urging the intensification of production. They are told that if they adopt more "intensive methods" and thus raise the value of their gross output, the country will gain in food, the worker in wages, and the farmer in profits. The fallacy of attempting to measure the efficiency of farm management by the value of the gross product has been clearly demonstrated,[1] but there are still those who think that falling prices can be countered by increasing output. On the face of it, the argument appears sound, for if a four-quarter crop just pays expenses, a five-quarter crop should leave a profit, but of course the fallacy lies in the fact that all consideration of the cost of the extra yield is ignored. Even though it were produced at a cost no more in proportion than that of the smaller crop, the extra quarter would result in no financial advantage to the farmer, and it is only if increased production could be secured at decreased unit cost that it would provide the remedy for falling prices.

Experiment has shown that beyond a certain level of output, dependent on the market price of the commodity, every unit increase in production is only to be won at an increasing unit cost—in fact, that agriculture is dominated by the Law of Diminishing Returns. The subject attracted the attention of Lawes and so long ago as the year 1879 he addressed a Farmers' club upon it. "You are told," he said, "to farm more scientifically, to meet lower prices by increased production. . . . To put the matter plainly: supposing there were a permanent reduction in the price of the saleable produce of the farm to the extent of 20 per cent., would the proper remedy be to increase our produce per acre by one-fourth, and so to bring up the saleable value to the same amount as before?"[1] He then proceeded to prove the operation of the economic law quoted above by reference to the results of his own experimental work at Rothamsted, and to show that in farming for increased production costs advanced at a greater rate than output, and, consequently, that higher farming was no remedy for lower prices.

---

[1] Ashby, A. W. *The Measurement of Standards of Production in Agriculture. Edinburgh Review*, Jan., 1922.

Sir John Lawes' conclusions were re-stated in 1905 by Sir Daniel Hall by reference to experiments on wheat on Broadbalk Field. The primary object of the experiments had been "to ascertain the value of nitrogenous manures, and test the truth of Liebig's opinions that the crop could obtain a sufficiency of nitrogen from the atmosphere provided the ash constituents were supplied."[2] With regard to one experiment, one plot received the mineral manures for ash replacement alone, whilst four others were arranged each of which received the same mineral manure dressing as the first, but, in addition, a nitrogenous dressing of ammonium salts equivalent to 43 lb. of nitrogen on one, 86 lb. on the second, 129 lb. on the third, and 172 lb. on the fourth (*i.e.* 200 lb., 400 lb., 600 lb., and 800 lb. ammonium salts respectively). The effect of these increasing doses of nitrogenous manures on the yield of grain is given in a table as follows:—

Experiments on Wheat, Broadbalk Field, Average over 13 *years* (1852–1864).

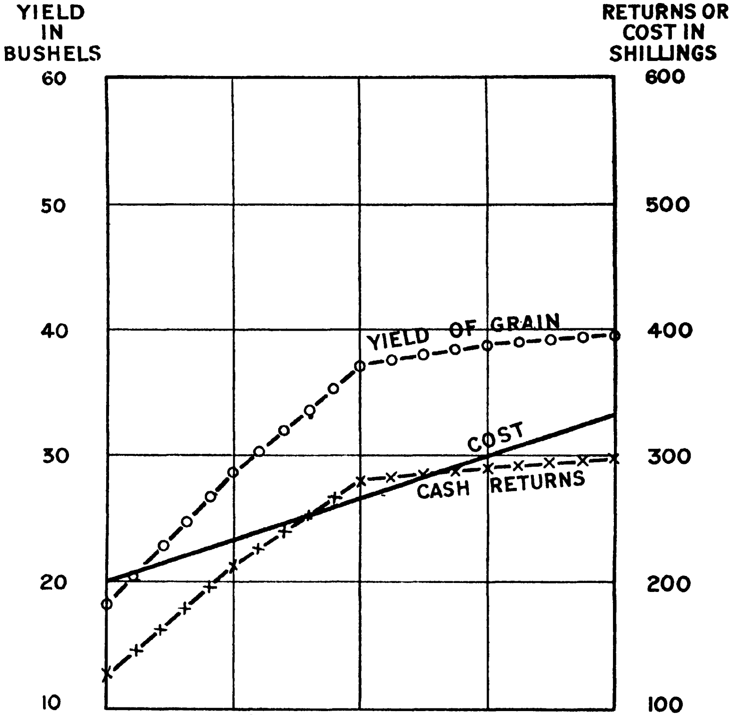
Plot.	Manures per Acres.	Grain per Acre.	Increase for each additional 43 lb. Nitrogen.
		Bushels.	Bushels.
5	Minerals alone	18·3	—
6	,, ,, + 43 lb. N. as Amm. Salts	28·6	10·3
7	,, ,, + 86 ,, ,, ,, ,,	37·1	8·5
8	,, ,, +129 ,, ,, ,, ,,	39·0	1·9
16	,, ,, +172 ,, ,, ,, ,,	39·5	0·5

It is evident from these figures that each increase in cost was accompanied by a smaller proportionate return, and that a point would be reached, sooner or later (determined by the price of wheat), at which the increased return is insufficient to meet the increased cost. The figures quoted above were very clearly interpreted by a chart constructed to show their results in pounds, shillings and pence based on prevailing costs of cultivation and manures and the current price for wheat. Assuming costs of cultivation to-day at £10 per acre, and taking a price of 60*s*. per quarter for wheat, the chart produced by Sir Daniel Hall has been reconstructed as follows :—

---

[1] Lawes, J. B. *Is Higher Farming a Remedy for Lower Prices?* A Lecture delivered before the East Berwickshire Agricultural Association, May 3, 1879. *Rothamsted Memoirs,* Vol. V.

[2] Hall, A. D. *The Book of the Rothamsted Experiments,* pp. 42–48.



Relation between Cost of Production, Yield, and Cash Returns with varying quantities of Manure (illustrating the Law of Diminishing Returns).

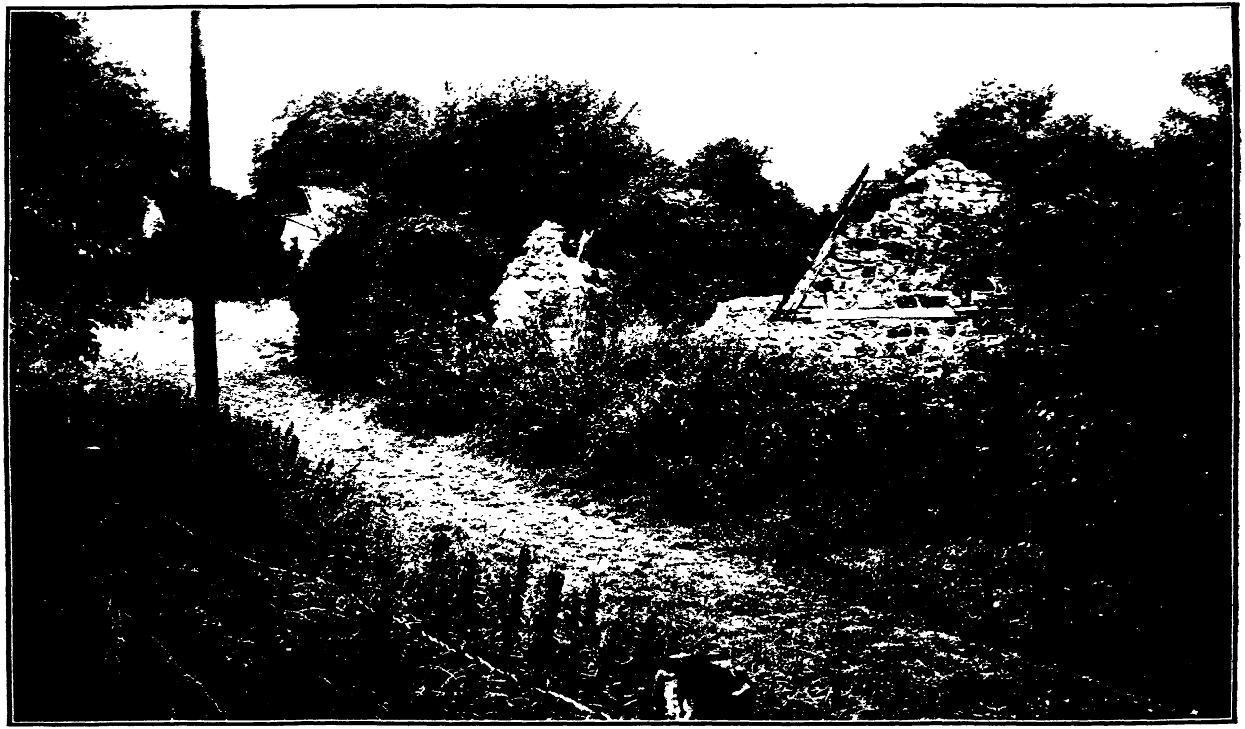
The cost of production rises uniformly with increasing applications of manures, which are taken as costing 34*s*. for each 200 lb. of ammonium salts. On the other hand, the returns, which rise steeply at the beginning—for the first 34*s*. of manure produces an increased return of 77*s*. 3*d*. in the crop and the second application a further increase of 63*s*. 9*d*. in the crop—begin to flatten out very much after this point, and the third addition of ammonium salts, costing 34*s*. as before, gives an increased return of 14*s.* 3*d.* only, the result being that the crop is produced at a loss. Supposing the price of wheat were to be 80*s.* per quarter instead of 60*s.*, then the cash returns for the grain would follow, as it happens, the line on the chart expressing the yield of grain, and the crop would remain profitable throughout. At the same time no advantage would accrue to the farmer for applications of manure beyond the second dose, for the third application would produce an additional value of 19*s.* in grain in return for an expenditure of 34*s.* on manure, whilst the fourth application would produce an additional value of no more than 5*s.* for an equal outlay.

What is true in the case of extra manures is true in the case of additional labour and other costs; what is true for the wheat crop is equally true for all farm products. In fact, speaking theoretically, it may be stated that there is a definite maximum of profitable production for every commodity for any given market price, and that the farmer who attempts to increase his production beyond this point does so at an increasing loss to himself. "Hence high farming (intensive cultivation and liberal expenditure on manure) is only justified in times of high prices and is no remedy for low ones."

The lesson which Lawes taught more than a generation ago, and which his first successor at Rothamsted illustrated so clearly, has still to be learned by the people as a whole. In reviewing the agricultural policy of the country during recent memory, the outstanding facts that seem to emerge are that those responsible for it have never had any clear idea in their minds of what they wanted to do, or if their minds were clear on this point, that they did not see all the implications and consequences of their policy. It is always being reiterated that Agriculture is our largest national industry, but in framing policy this fact has very little weight, for it is not a question of balancing the needs of one industry with any other, in which case the importance of agriculture would be bound to be felt, but of contrasting agriculture with industrialism as a whole, and when this is done, the land sinks into a position of secondary importance. Certain schools of politicians have enunciated their views without any ambiguity. The Protectionists were perfectly clear as to their objects and made no mistake about the consequences that would ensue. They said: "Let us tax imports and we are quite prepared to face the fact that food prices will rise, so long as this results in prosperity to landlord, farmer and labourer. The essential thing for the nation is a prosperous agricultural industry, and in the face of the development of labour-saving machinery and transport facilities from new countries there is no way of securing the prosperity of British farming other than by Protection." Mr. Joseph Chamberlain was equally clear, in his own mind, as to what he wanted and as to its consequences, although those who supported him did not always realise the reactions of his policy on the farming industry. He said, in effect: "England is a manufacturing country; what it wants is markets for its manufactures and cheap food for its urban workers. The Empire as a whole is big enough to be self-sufficing, and what we have to do is to make a bargain with our colonies and dependencies under which they will take our surplus manufactures and give us their surplus food."

Here we have two perfectly clear and opposite policies, the one framed to foster agriculture at all costs as an essential national industry, the other urging the economic organisation of the Empire on a basis which would exclude agriculture as a serious and vital British industry. Each of the policies has been discredited in the minds of most people, and between them lies the large body of opinion that agriculture must take its chance as other industries do in this country and must organise itself to meet competition as best it can. It may be that this is the best policy, but if the nation decides to adopt it, as for the moment it appears to have done, it must do so with a clear understanding and acceptance of all that it involves, and the only conclusion to be drawn from the legislation of the past generation is that whilst the nation seems to incline very definitely towards this policy, it is not inclined to accept the natural consequences, but rather to demand from the agricultural industry results which cannot be secured from such a course. The agricultural depression of the 'eighties and 'nineties has made these consequences a matter of history, but they seem nevertheless to have been forgotten by many during the recent spell of agricultural prosperity. The figures from Rothamsted quoted above prove that it is only during a time of high prices that the farmer is justified in seeking to raise the standard of production. At such times it pays to cultivate land that yields a relatively low return. It pays to invest capital liberally in labour and fertilizers on the better land in order to make good yields larger still. It pays to apply expensive feeding-stuffs for the production of meat and milk. High prices and a rising market justify a vigorous policy and the farmer should farm high and stimulate his land to produce the utmost. On the other hand, low prices and a falling market call for the reverse policy. The idea of intensive farming with consequent high production must be abandoned. What brought disaster to so many farmers in the 'eighties and the 'nineties was their attempt to keep up production in face of a falling market.

This is the situation with which farmers are faced to-day. The war-time market has broken and probably the bottom has not yet been reached. The nation, speaking through the



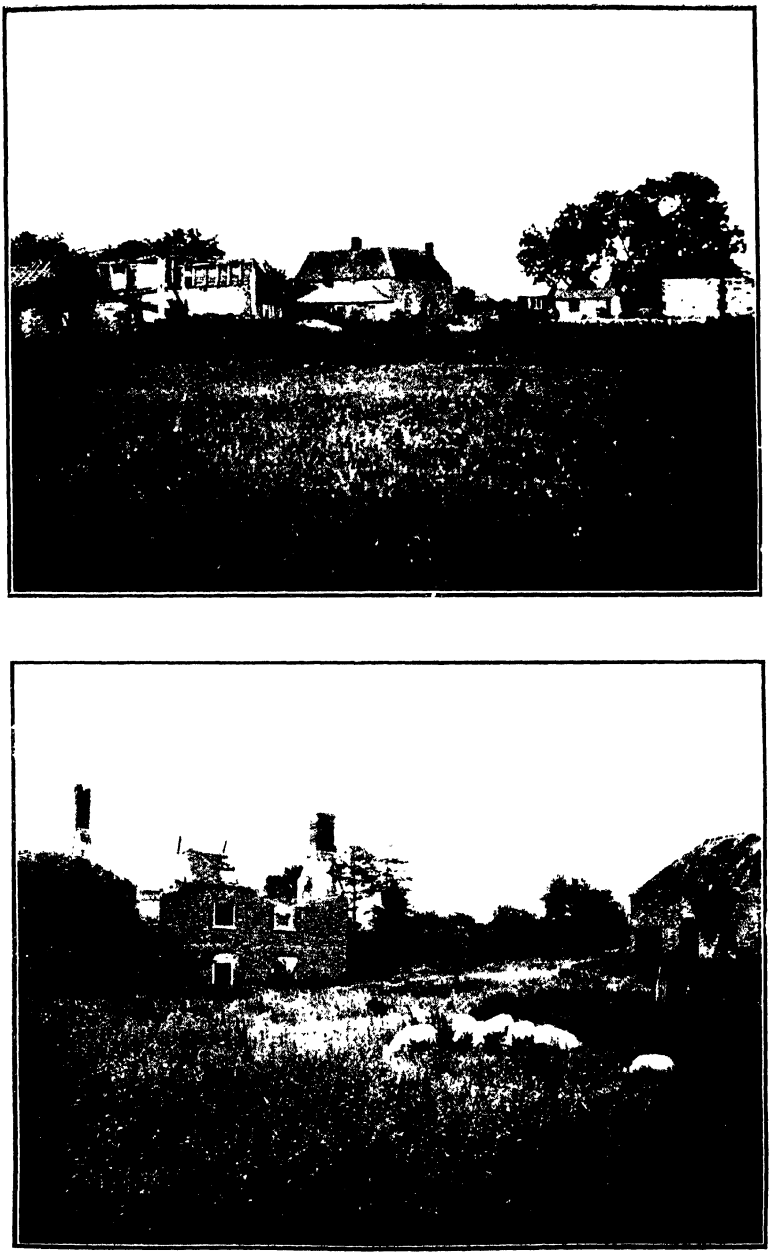
A Deserted Village: The Consequence of Low Prices.

Fig. 1.—The Village Street

Government, has declared itself against every form of subsidy for the industry. This may be a good thing; it is often argued that a spoon-fed industry has no inducement to develop itself, and in general it is no doubt stimulating for an industry, just as it is for the individual, to be thrown on its own resources and to get on or go under. Now there is plenty of room for a further fall in markets before farming of one kind or another ceases to be a remunerative investment, but the country should be perfectly clear as to what is involved. The remedy for low prices is the reduction of costs and of output. This was proved in England during the agricultural depression, and the same lesson may be learned from the history of agricultural development in the new countries. In England there were men who made money during the depression; by good luck, or good judgment, they realised that the time for intensive farming had gone, and by a drastic cutting of costs and a reduction of output they stood their ground during the longest spell of adverse markets that the agricultural industry has ever had to face. Most of them succeeded by giving up arable farming, but, here and there, men stood out conspicuously as successful arable farmers. By throwing farm to farm, and applying the minimum of capital to the larger area, they managed to secure a small acreage-profit, which in the aggregate fully justified their method of meeting the conditions of that time. In the newer countries the conditions of production have called for the same methods. If the cost of the long rail and sea carriage be regarded as a set-off against cheaper land, the American farmer was face to face with the same problem, and he solved it in the same way. He applied the minimum amount of labour and capital to his land and made no attempt to increase employment nor to increase the yield of his land above its natural capabilities. Consequently, though his crop averaged only half the figure usual in this country, and though rates of wages were on a scale higher than English workers ever knew, his total costs were low, and he was able to succeed where we failed. All the advocates of intensive production have overlooked the fact that in all the great exporting countries which dominate the English market, production is less intensive than anything England has practised for a century, and that it is by a low standard of output, accompanied by a standard of costs still lower, that they have succeeded in making farming pay. That which some men tended to do in England during the depression, that which men have always done in the new countries, can be done by men generally in this country if the conditions of the market drive them to it. By cutting down fences and laying fields together for mechanical cultivation in large areas, they can reduce their labour while continuing to pay high wages to the men retained; they can cut down their expenditure on manures and on cultivations intended to increase the fertility of the soil, and at the end of it all, with reduced productivity, and with costs even more substantially reduced, they can make their farming—or ranching—pay. They may go a stage further, and lay large areas of the less fertile arable lands down to grass, and in the last resort they can, if necessary, lay the whole country down to grass, and make English agriculture once more a primitive pastoral industry. What would happen then is well illustrated by what actually did occur in a little village in one of the southern counties thirty years ago. The hamlet consisted of two good farm-houses, a school, a chapel, and fourteen cottages, the land around being light arable land, and corn the principal crop. All these houses were occupied by farm-workers of one kind or another, and the activity of the social life in such a rural area under conditions of prosperity in corn growing is illustrated by the fact that in the early 'eighties of last century there were no fewer than forty-four children living here who attended the school. When the decline in corn prices, which began some forty years ago, had reached a certain point, production from this light arable land became unprofitable to its then cultivators, who accordingly sold out. The purchaser set about adapting his management to the times; gradually the whole of the arable land was laid down to grass; and ultimately a shepherd and a dog replaced the fourteen families who were formerly engaged upon the land. Both the purchaser and the shepherd lived elsewhere, and to-day there can be seen a deserted village, the roads grass-grown, the school and chapel gone, the farm-houses and cottages ruinous, the gardens waste—all within seventy miles of London, the centre of a State which imports more food per head of population than any in the civilised world.

This great decline in social and economic life was the inevitable result of economic pressure. Farming of the kind which was necessitated can be carried on profitably and such labour as is required can be paid high wages, but in proportion as economic conditions force this policy upon farmers so will production and employment be reduced. In framing agricultural policy people seem too apt to shirk, or at all events, to overlook the consequences. It may be better for the nation to leave agriculture to shift for itself, but if the nation so decides it must accept the only possible consequence—namely, that production and employment will decline.

Arable farming gives more employment than grass farming and a greater production—both of them results which the nation most desires—but the labour is largely of the kind described as "unskilled" and consequently low paid, whilst the production involves the farmer in an outlay relatively heavy for a return



A Deserted Village: The Consequence of Low Prices.

Fig. 2.—Farm Houses and Buildings.

relatively small. Grass farming, on the other hand, gives little employment, but the labour is mainly "skilled," and better paid, and although the product-value is relatively low, it is secured at a cost relatively even lower, with greater profit, consequently, to the farmer. Thus the interest of the farmer and of the individual worker is in direct conflict with that of the community.

The advantages of grass-land farming from the farmers' point of view and the strong appeal that it makes to the cautious amongst them at all times are well known. Capitalisation, labour, other payments, receipts, each and all of them are less per acre of grass land than per acre of arable land, whilst profits per acre frequently, and profits per unit of capital nearly always, are more on the former. The position of the agriculturist under either condition is well illustrated by the actual experience of a Southern-Counties farmer. For many years he had farmed a light-land holding, half arable and half grass, devoted to corn-growing, sheep-breeding and cattle-rearing. In the year 1914 he quitted this farm and took over another one in the same locality which was almost exclusively grass. Eliminating the results of his last year (1913–14) on the mixed holding and also those of his first year (1914–15) on the grass holding, both of which might be held to be abnormal owing to the influence of factors connected with the outgoing and the ingoing in either case, an abstract of his accounts shows the following results over a period of four farming years, two on either holding :—

Financial Comparison of Arable and Grass Farming.

	Year.	Per Acre.															Profit on Capital.
		Capital.			Labour.			Other Payments.			Receipts.			Profits.			
		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	%
Farm A. 1,091 acres, ½ arable.	1911–12	8	2	3	1	0	5	4	0	6	5	5	7	1	3	6	14·5
	1912–13	7	17	2	0	19	2	3	14	9	5	7	10	1	14	0	21·5
Farm B. 720 acres, $\frac{1}{12}$ arable	1915–16	4	3	4	0	7	9	2	0	4	4	1	0	2	1	6	49·8
	1916–17	3	15	2	0	8	2	1	17	0	5	7	7	3	11	0	94·5

The figures are worthy of consideration on the part of those who think that English agriculture should be intensified, particularly when it is remembered that intensification means more plough-land. The capitalization of the mixed farm A is exactly double that of the grass farm B ; the labour requirement is nearly three times as much ; the other payments are double ;

but although the total production from the mixed farm, as measured by receipts, is slightly higher than that from the grass holding, the resultant profits in the former case are no more than one-half when considered per unit of land, and very much less than this when considered per unit of capital. These comparisons are the more remarkable as regards capital equipment and labour cost, when it is remembered that the figures quoted for farm B are those of the early years of the War period, when agricultural values had advanced materially beyond those obtaining in the years covered by farm A.

The conditions which obtained thirty years ago in a very extreme form in the little Wiltshire hamlet mentioned above were universal throughout the country about that time in varying degrees, and thoughtful people, alarmed by them, attempted to find ways by which to remove the effects without, however, touching the causes. Government sought to remedy unemployment and depopulation consequent on low prices by various measures calculated to bring about the closer settlement of the land. The idea was that if farms were cut up into small holdings they would provide employment for a larger number of men and at the same time production would be increased. There is probably good ground for this contention, but it took no account of the status of the persons affected. A survey recently made [1] of the production from holdings grouped according to size in a region where the general conditions were pretty uniform, gave the following results :—

						£	*s.*	*d.*
On farms of	1–50	acres	production	per acre	was	11	19	9
,, ,,	50–100	,,	,,	,,	,,	9	19	2
,, ,,	100–150	,,	,,	,,	,,	7	19	1
,, ,,	150–250	,,	,,	,,	,,	7	5	8
,, ,,	over 250	,,	,,	,,	,,	8	4	4

If results similar to these were general over the country, as many people maintain them to be, they provide at first sight a strong argument for the advantages likely to accrue from a closer settlement of rural areas by means of small holdings, but is the argument sound ? The country, of course, requires the highest possible production, but the position of the worker in the industry must not be disregarded. He has got to live, and his concern is not necessarily to produce the most that he can, but to secure the biggest income that he can get. Many people, basing their arguments for small holdings on production, have entirely overlooked this fact, but the workers in the industry have long

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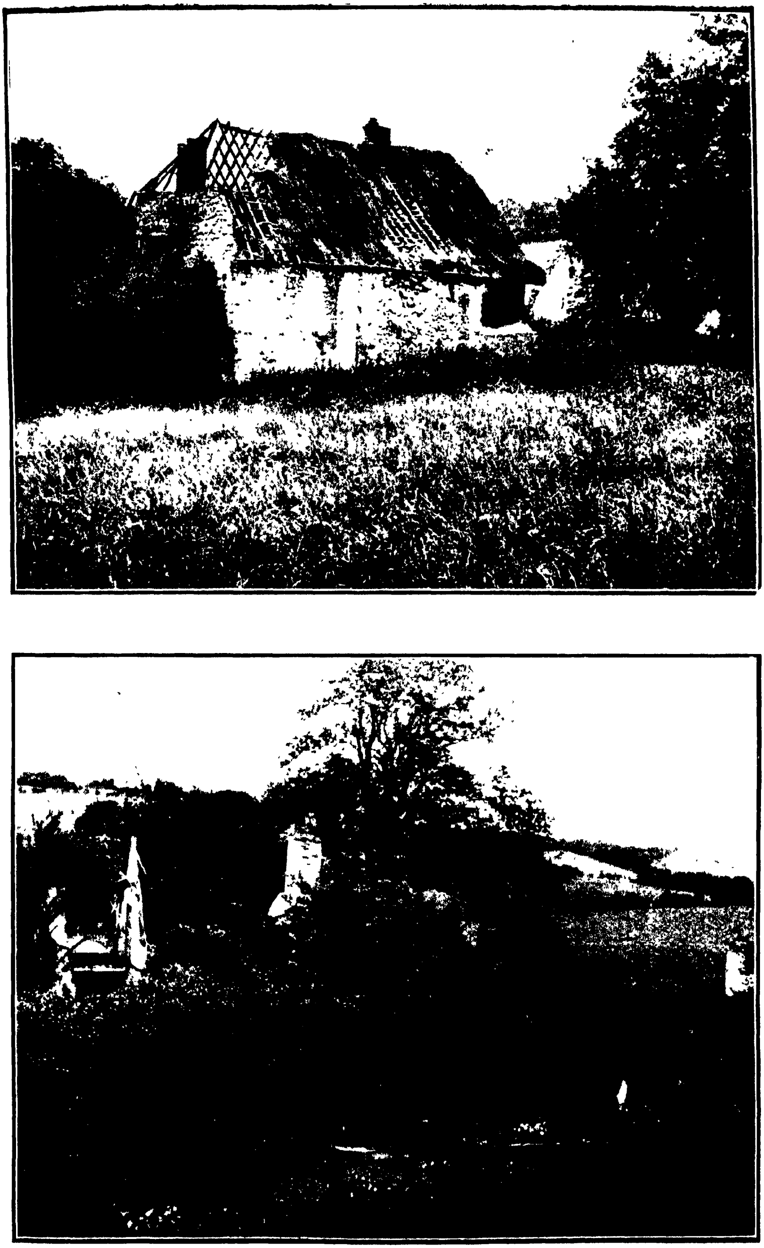
[1] By J. Pryse Howell.



A Deserted Village: The Consequence of Low Prices.

Fig. 3.—Cottages.

realized that the two things do not go necessarily hand in hand, and their justification is obvious when we examine the production *not per acre but per man employed*, in the district from which the figures just quoted were drawn. Grouping the farms as before, we get the following results :—

	£	s.	d.
On farms of 1–50 acres production per man employed was	168	19	0
,, ,, 50–100 ,, ,, ,, ,, ,,	156	2	0
,, ,, 100–150 ,, ,, ,, ,, ,,	189	0	0
,, ,, 150–250 ,, ,, ,, ,, ,,	222	12	0
,, ,, over 250 ,, ,, ,, ,, ,,	316	19	0

The results as they stand illustrate in another way the fact already demonstrated, namely, that the intensification of production is no remedy for depressed conditions in the farming industry, but, on the contrary, that at such a time a reduction of output points the only way to the maintenance of wages and profits.

While these words were being written, an important gathering of representatives of labour [1] met together to consider problems of the moment, was adopting the following resolution—"Whereas agriculture can exist without any other industry, while no other industry can exist without agriculture, it is vital to the national welfare that our home agriculture should be placed in such a condition as will enable the land of Great Britain, first, to produce a maximum, thus reducing the vast sums we are paying abroad for our daily food, and, secondly, to employ the largest possible number of workers at adequate remuneration." These aims are mutually destructive under existing conditions.

Whilst it is clearly demonstrated that in the light of our present knowledge the only remedy for falling prices is the reduction of employment and of output, it is always possible that the ingenuity of the farmer will devise some means of meeting unfavourable market conditions in some way more satisfactory both to himself and to the community. The decline in production of the main agricultural staples which followed the last great depression has no doubt been balanced, in a measure, by the enormous development in favoured localities of market garden cultivation and milk production, in fact, the rise of these forms of agriculture is perhaps the most noteworthy feature of recent agricultural history. It is possible that experiment in some direction such as that of arable stock-farming may prove that a change over to such a system would be profitable to the farmer whilst at the same time maintaining, or even increasing, the present standard of production and employment in rural districts. It has already been proved that dairying on the soiling system is much more intensive than milk production on grass farms, but there is not sufficient evidence at present to show that this is not merely another proof of Lawes' oft-quoted *dictum*. When the profit side of the experiment can be demonstrated it may revolutionise farming over large areas and thus provide the solution of the difficulty with which the agricultural industry is now faced. Until this has been done the farmer can only play for safety. The agricultural policy of this country for the last forty years has been in the main one of *laissez faire*. It is true that the late Prime Minister showed some measure of enthusiasm for the industry which resulted in the passing of the Agriculture Act, 1920, but even in those days, when prices were high with no prospect of an immediate fall, many people said when talking of the guarantees embodied in the Act, "The nation will never stand it." Events have proved that they were right and that the nation will not stand it, and neither farmer nor farm-worker enjoy any longer the protection of the State. Nevertheless, the farmer can organise his business to meet the new conditions, and can frame a policy of management which will be justified by results. As things are at present it will be accomplished by reducing wages and other expenditure, and if the present trend of affairs develops, it will result in the reduction of production and in rural depopulation. To visualise what would happen in the last resort a few shepherds and their dogs would suffice to tend the flocks which alone would then be left to range the once highly-developed farming lands of England.

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[1] The London Constitutional Labour Organization.

Production from the land in one form or another will continue, but its intensity must be determined always by the market. There is a given level of output possible for any given scale of prices, and although the spread of education and the discoveries of science should result in the raising of the *datum* this does not affect the fundamental economic truth that in farming the standard of production varies directly with the progress of prices. The community can require a high standard only if it is prepared to pay for it, and should there be developments in the direction of declining output and rural depopulation the responsibility will rest upon it and not upon the landowners and farmers who direct the industry.

C. S. ORWIN.

Institute for Research in Agricultural Economics,
School of Rural Economy,
Oxford.

THE DEVELOPMENT OF AGRICULTURAL EDUCATION IN ENGLAND AND WALES.

THE early history of agricultural education in England can be shortly told. John Sibthorp, who had succeeded his father as Professor of Botany at Oxford and died in 1796, founded a Professorship of Rural Economy at that University. The emoluments were small and in 1840 the Professorship was jointly held with that of Botany by Charles Daubeny, who did some serious work on the then little-known question of the source of the nutrition of plants and the part played by the soil, researches which may be read with interest to this day. Of systematic instruction in anything bearing upon agriculture there appears to have been none ; however, it is known that John Bennet Lawes, during his residence in Oxford, did attend Daubeny's lectures and derived from him some of the stimulus which led to his later experiments at Rothamsted, first in the garden and then in the field. After Daubeny's time the income from the Sibthorpian endowment was allowed to accumulate until such time as the accumulations were sufficient to pay some eminent man for a course of lectures, and it was under these auspices that John Henry Gilbert and Robert Warington delivered valuable discourses to the University. Their effect upon the undergraduates of the time was naturally of the slightest ; they had no connection with any of the normal courses of instruction, they took place in the afternoon when young Oxford generally has other occupations, and it must be confessed that valuable as were the lectures in their printed form for the advanced student of agricultural chemistry, their dullness in delivery must have been unredeemed except to one who could have found interest in the marked personalities of the two lecturers. The Sibthorpian Professorship took on a new complexion in 1907, when it was re-endowed by St. John's College, a step which brought Dr. William Somerville to Oxford as the first resident Professor of Rural Economy, and led to the recognition of agriculture as a subject of study leading to a degree.

The existing Universities being thus out of the question, the great interest which began to be taken in the scientific development of agriculture from 1840 onwards led to the foundation of the Royal Agricultural College at Cirencester in 1845. After a somewhat chequered start it became a living centre of instruction and has numbered among both its staff and its students many of the most distinguished leaders of agricultural progress during the last fifty years. From Cirencester hived off another college at Downton, conducted for many years as a private venture by the late John Wrightson, and a similar college was started at Aspatria in 1878. But down to the close of the 'eighties of last century these constituted the only systematic courses of instruction in agriculture in England, if we may except certain classes, primarily intended for teachers, which were given at South Kensington under the auspices of the Science and Art Department. Though the facilities for obtaining instruction were thus limited, the Royal Agricultural Society did a good deal towards the encouragement of study upon sound lines by the institution in 1868 of an annual examination, upon the results of which a Diploma was awarded. The solitary student upon a farm or in an agent's office thus obtained a valuable stimulus towards the attainment of some knowledge of the scientific basis of agriculture; the lines upon which he should study were laid down for him, and the diploma he could obtain proved of considerable value if he was seeking any appointment at home or abroad. In 1897 the Royal Agricultural Society joined forces with the Highland and Agricultural Society, who had been conducting a similar examination, and a joint committee was appointed to carry out a single examination for the existing National Diploma of Agriculture. Now that so many agricultural colleges are at work, the solitary worker to whom this examination was so particularly valuable has practically disappeared, but many students still find the National Diploma a valuable qualification to add to whatever Diploma or Certificate they may obtain from their place of education. The examination also serves as a testing-ground on which rival educational institutions may compete by means of the number of successes their students can obtain, though it may be questioned whether such competition does not impose too great a uniformity upon the college courses of instruction and hinder the development of the colleges along specialised lines most adapted to their situation and local requirements. The National Diploma nowadays is perhaps not so much a guide to the education of the future farmer as a useful commercial asset to the student who wants to become a teacher or an official.

So far no State assistance had been available for agriculture, but in 1884 the newly founded University College of North Wales at Bangor began to include agricultural science in its curriculum. The Technical Instruction Act of 1888 gave powers to local authorities to establish agricultural instruction, and in the same year the Government placed an annual sum of £5,000 at the disposal of the Agricultural Department of the Privy Council (afterwards the Board of Agriculture) for the purpose of aiding agricultural and dairy schools. Funds were however still lacking, and it was not until 1890 that the handing over of the residue grant (the so-called "whisky money") to County Councils for the purposes of technical instruction enabled any real progress to be made. Thereupon immediately followed the foundation of a number of agricultural colleges and institutions, which have persisted and grown to form the basis of our system of agricultural education of to-day.

The Agricultural Department of the University College at Bangor began work in 1890, and this example was followed by the sister college at Aberystwyth in the following year, when also the Yorkshire College at Leeds began its agricultural courses. In 1892 the Armstrong College at Newcastle began operations, and in 1893 the School of Agriculture at Cambridge was started, as well as the Agricultural Department at the University College at Reading. A year later the South-Eastern Agricultural College at Wye opened, the Midland Agricultural College, first at Nottingham and later at Kingston, began operations about the same time, and in 1901 the Harper-Adams College opened at Newport, Salop.

Of what are now Farm Institutes the Hampshire Farm School opened at Basing in 1889, the East Anglian Institute at Chelmsford in 1893, and the Farm School at Newton Rigg, Cumberland, in 1896.

The foundation of all these institutions was the direct outcome of the allocation to County Councils of the "whisky money."

With the setting up of the Development Commission in 1909 fresh funds became available for agricultural education, and these have been further increased by the provision made by the Government for agricultural education and research just after the Armistice, and by the assignment to the same purpose of a sum of £850,000 when the Corn Production Acts were repealed in 1921.

It was by means of the Development Fund that the Board of Agriculture was able in 1913 to launch the scheme for Farm Institutes, the object of which was to make provision through the local authorities for agricultural instruction of a lower grade than that provided in the colleges, either by means of a permanent institute giving short courses of instruction up to one year in duration or by means of systematic lecture courses held at local centres.

The growth of the State appropriations for agricultural education in England and Wales may be summarised as follows :

	To Colleges, etc.	To Local Authorities
	£	£
1889	5,000	—
1908–9.	12,300	—
1913–14	18,500	17,000
1921–22	62,000	230,000

In addition, the local authorities also contributed from 1890 onwards to both colleges and local instruction varying sums out of the " whisky money." At the present time the identity of the " whisky money " is no longer preserved, it being regarded as a general grant in aid of rates, but the local authorities contribute to agricultural education a sum which is approximately one-half of the grant made to them by the Ministry of Agriculture.

The outcome of the movement for the development of higher agricultural education is that twelve agricultural colleges recognised and assisted by the Ministry of Agriculture are in operation. With two exceptions each college serves a certain provincial area, within which it exercises certain advisory functions and is linked up to the county organisations which take charge of the local forms of instruction. In addition to their teaching activities the colleges are expected to give advice on such questions as manuring and soils, feeding rations, plant diseases, etc., to the farmers within their area, and to that end they have been provided with certain officers who are but to a small degree occupied in teaching. This advisory work in some of the colleges is being extended to cost accounting and to veterinary investigations, though from lack of funds these subjects are not being dealt with generally until at least it is seen how the experiment is going to answer.

The College should be the intelligence centre of its area; the county organisers and instructors within that area should look to it for advice and help in the solution of the problems arising in the course of their work and should be the chief agents in finding pupils for the college and in encouraging the farmers with whom they are brought more directly into contact to regard the college as an institution that can be made of service to them. Already the colleges hold regular conferences between their own officers and the organisers and instructors within their area; it may be hoped that by degrees there will be worked out at these meetings a general educational policy for the area, embracing the local class work and the lecture system, the field experiments, the advisory work and educational co-operation with such agencies as the milk-recording and the live-stock improvement societies. A milk-recording society has in the first instance its own proper work to do, but it forms an excellent nucleus for further work in the study and promulgation of the cheapest and most effective rations, in breeding and similar questions. Too much emphasis cannot be laid on the desirability of co-operation between the staffs of the colleges and of the local authorities associated with it. Local authorities in England and Wales have been allowed very complete autonomy in agricultural education, though the central authority is providing the bulk of the funds. It has not infrequently been urged that a purely central administration would result in a more equal and more effective system, but the advantages that centralisation promises can be secured if the local authorities and their officers will co-operate with the colleges in a common scheme.

The existing agricultural colleges which act as provincial centres are:—

Armstrong College, Newcastle—Northumberland, Cumberland, Westmorland, and Durham.

The University, Leeds—the three Ridings of Yorkshire.

The University of Cambridge—the Eastern Counties.

The South-Eastern Agricultural College, Wye—Kent, Surrey, and Sussex.

University College, Reading—Berks, Bucks, Dorset, Hants, Middlesex, and Oxford.

Seale-Hayne College, Newton Abbot—Cornwall and Devon.

The Midland Agricultural College, Sutton Bonington—Derby, Leicester, Lindsey, Notts, and Rutland.

The Harper-Adams Agricultural College, Newport, Salop—Shropshire, Staffs, and Warwick.

University College of Wales, Aberystwyth—Mid and South Wales and Monmouth.

University College of North Wales, Bangor—Anglesey, Carnarvon, Denbigh, and Flint.

In addition, the University of Oxford conducts a recognised course of higher instruction, but unlike Cambridge has no provincial area attached to it; also the Royal Agricultural College at Cirencester has just been re-opened, but again has no provincial connection. It will be seen that certain parts of the country are not associated with any college, but the University of Manchester undertakes advisory work for Lancashire and Cheshire, and the University of Bristol, through the Fruit and Cider Institute at Long Ashton, acts as an advisory centre for the counties of Gloucester, Hereford, Somerset, Wiltshire, and Worcester.

Further, in consideration of the difficulty of access to Aberystwyth, an advisory centre for South Wales has recently been set up in connection with the University College at Cardiff.

All the colleges, with the exception of the residential colleges (Wye, Harper-Adams and Seale-Hayne), are open to both men and women; at Swanley also a Horticultural College for women only is recognised.

The essential character of an agricultural college is that it provides a long course of instruction extending over two or more generally three years. The students should be at least 17 years of age at entry, and should have received a good general education at a secondary school. Unfortunately the colleges cannot as yet count upon this preliminary education being of such a character as will relieve them of the necessity of teaching the elementary science that is the necessary foundation for the applied sciences which constitute their proper business. Consequently a large part of the first year's course has to be devoted to ground which should have been covered at school. It is indeed curious how in the present state of English education the majority of students who arrive at an agricultural college seem to have escaped any acquaintance with elementary chemistry. It is a much-debated point whether the boy should come to the college straight from school or whether he should have had some initiation into practical farming. Of course, if he is a farmer's son the question does not arise, but the ordinary town boy cannot make the best use of the teaching of agriculture he will receive unless he already knows something of the routine of a farm. None the less, any long stay on a farm between school and college is apt to break the habit of study and produce a frame of mind that is very impatient of such kinds of instruction as can be brushed aside as theoretical. No one is more anxious to be practical and nothing but practical than the youngster who has recently left school and is making his first acquaintance with business. Those with real farming experience know better where their weakness lies and what can be learned only at a college in order to be used on a farm. Whichever comes first, farm or college, will be the less utilised for the lack of the other. A reasonable compromise for the town-bred boy is to leave school at the Easter before he goes to college, and to spend upon a farm the intervening six months which embrace the most strenuous working half of the year. In any case, the town-bred boy will have to go upon a farm after leaving college in order to obtain something more of the practical experience of labour management and marketing than any college farm can afford.

The college course of three years' duration aims at providing a thorough technical training in agriculture and the sciences that bear upon it, such as will fit the recipient to manage a large farm with efficiency and with the capacity to take advantage of all the opportunities that the developments of science and industry provide. Of course the college student may have to start business in quite a small way, but it is to the college-trained men that farming may look for its leaders in the future. Parenthetically it may be observed that young as are the agricultural colleges in Britain, their earlier graduates are making good and are to be found in responsible positions all over the country. This would have been still more the case had a larger proportion of these early pupils possessed capital and been in a position to start farming on their own account instead of taking to teaching or some official career.

The aim, then, of the college course is to turn out a manager, a head rather than a hand, and this at once puts into a secondary position in the curriculum the acquisition of skill in the manual operations of the farm. Of course a master must know enough of the actual job to be able to judge whether work is being properly done or not and to put a man or machine right when effort is being wasted, and no agricultural student worth his salt but will learn to take his turn at every operation to which he has to put his men. But far more important for him is to learn exactly when the job is to be tackled, how much strength it will require and how he must prepare for it beforehand, and what amount of work he ought to get out of his men—management, in fact. If, then, a college course of instruction is to be an introduction to management to that extent, ought it to be based upon science? When agricultural education began to be developed systematically in this country a generation ago, the view generally held was that agriculture should be treated as an applied science; the cultivation of the soil was applied chemistry and physics, the growing of crops applied botany, the feeding of animals again a specialised kind of chemistry. Consequently the basis of the instruction was scientific, and a number of sciences besides chemistry and botany established their claim to a share of the student's time and attention. Now, fundamentally, this point of view is sound enough; practice must be based upon science, methods can only be judged if there is an initial understanding of principles, a man must learn the language of science in order to read and criticise or apply the work of research. But what with the zeal of the specialist teachers and the pressure of examiners, a good deal of science gets exacted from agricultural students that is of academic interest only, unnecessary in that it is neither valuable as information nor essential to the intellectual appreciation of the subject. No harm would be done, because no knowledge is useless, were not the student's time so limited and the field so vast that selection is forced upon the educator. He must concentrate the student's attention upon the aspects which bear most stimulatingly upon the object—and that object, as has been said above, is management. It is perhaps not sufficiently realised that farming has its own basal science, and that is accountancy. Farming is essentially a business to be judged by results; applied chemistry may produce the bigger crop or the fatter beast, but enlightened farming must know what they cost. We need, therefore, in our agricultural education to dwell a little more lightly upon science, or rather to give even greater prominence to the teaching of agriculture itself—and that upon a more extended and exact basis. To begin with, book-keeping is not only a subject to be learnt but the method which the teacher, and in his turn the student, must use for the criticism of every step in the routine of the farm. The teaching of farming should be not only descriptive of the customs of existing farmers, but should pass on to discussion and criticism, checked step by step by determined costs and results. The consideration of costs, whether of materials and labour, must everywhere dominate the treatment of the subject.

My plea, therefore, is that the study of agriculture itself should bulk even more largely than at present in the college course, but that it should be agriculture treated on its own scientific basis of costs and returns, with particular reference to management and the organisation of labour. The labour bill constitutes the larger part of the expenditure on a farm, and though it is sometimes asserted that the handling of men is only to be learnt by experience, it is through a study of costs that it can be approached by a student, as it will have continuously to be criticised in later life by the working farmer.

At the present state of development it is hardly desirable that the number of agricultural colleges should be increased. To be efficient, each requires a large and specialised staff, entailing a considerable annual expenditure in excess of fees, and it would appear to be more economical and make for greater efficiency to develop existing institutions than to start new ones. Only when the numbers of students are large can one justify the provision of the multifarious adjuncts to teaching—libraries, museums and workshops—demanded by an agricultural course. With a large staff again individuals can obtain the extent of free time that they require in order to engage in investigation and make themselves of real value as original exponents of their subject. It is hardly as yet realised that English agriculture has to be learnt before it can be taught. Much of its best practice has been developed locally and has never found its way into the text-books, even in the way of pure description. Still less can we find set down in print any discussion of the economic basis of the methods followed in a particular district. For example, with one breed of arable-land sheep it is the custom to force on the lambs and sell them fat in the autumn and early winter; a few miles away with the same or a similar breed the lambs are kept through the winter and fattened off to sell in the early summer of the following year. Hot argument prevails as to which is the more paying process, but it is not usual to find that either side can produce any very satisfactory justification for its belief—there are many factors to be brought into account, and the difficulty is to give to each its proper weight. The ideal teacher of agriculture, however, is the man who will not only discover the existence of these special or even contrasting methods in the district in which he is located, but will set to work to gather up such a body of facts and figures—labour costs, food costs, production and prices realised—as will enable him to put before his students a reasoned discussion of the advantages and disadvantages of the two methods. It is only by this kind of investigation that the development of English agriculture can be affected by the teacher. There is no absolutely right or wrong way of farming, the teacher cannot describe the perfect method of growing wheat or raising sheep and leave his students to put that method into practice as best he can. *Best* can only be measured by the cash results, and they are determined by conditions of soil, climate and markets. Rather must the teacher aim at showing his pupils how the desired end of profit may be attained by different methods, impressing upon them the means by which a farmer can keep checking and testing his methods until he arrives at the one which will yield him the best results. While every teacher of agriculture in the country may not be able to become an independent investigator of this sort, it is the men who will devote themselves to continuously learning their subject from the farmers with whom they establish contact who will become the leaders and authorities. Our teachers should have such an ideal before them and some leisure from the routine of teaching in order to pursue it.

It thus appears that the staff of an agricultural college is bound to be a large one and consequently expensive. Agriculture itself, if it is to be based upon inquiry and upon accounting, is vast enough; then there are all too many sciences which more or less bear upon agriculture, and about which the serious student ought to learn something even if he is not expected, as he ought not to be expected, to pass an examination upon it. Chemistry and Botany are obviously basal sciences; the study of the soil would seem to call for some acquaintance with geology, zoology—particularly entomology puts in a claim; veterinary medicine and hygiene are important; bacteriology comes in in various directions. Then there is engineering of growing interest in these times; surveying and building construction concern the farmer less but appeal to the student who thinks he may some day want to be an agent, and this again opens the whole field of estate management and law. At this rate the agricultural student's course would become as full as that of a doctor, and the colleges would require the staff of a medical school. Some means of economy must be found, and the main one is the pruning of the curriculum. But there is one further method possible that will add to rather than diminish the efficiency of the teaching. The defect of much present-day education is that there is too much teaching about it; the student is a passive recipient rather than an active collaborator. Very possibly the examination is the source of the bad method into which we have fallen. The student not unnaturally looks at his work from the point of view of the ultimate examination; he has a curriculum set before him and he expects to be told by his professor or lecturer everything that is embraced in the syllabus or may be asked in the examination. If he can reproduce the lectures he expects to pass the examination, and he considers he has a grievance against either examiner or lecturer if he finds himself asked a question that has not been covered by his lectures. Teachers have too generally accepted this implicit demand, they make their courses a carefully selected digest of the subject; in the worst case of all they slowly dictate and the student takes the lecture down verbatim. A good set of lecture notes is a possession which replaces the textbook, and is even held to dispense with any other reading of the subject. But inasmuch as the textbook contains all the information the student needs, the function of the lecturer should be to give the student a point of view and to teach him how to use his textbook. A teacher imbued with this spirit has been known to forbid his students to take a note during his lectures. "For that," he said, "I distribute a typescript at the end. While I am talking I want all your attention in order to understand my words, not to write them down." But to return to the question of economy; the college student of to-day is generally provided with lectures for every hour of the working day; in the evening he will write up his notes and later read through them in order to assimilate them. Suppose the teacher instead of lecturing for two hours in detail covered the same ground in one hour, concentrating on the difficult points and the spirit of the question, but continuously referring his hearers to the textbook for the details or the routine parts of the subject which require no explanation. Then let the student spend the other hour alone with his notes and his textbook, getting up the case to which the lecturer has given him the clue and the further references. It would be a much better mental exercise for the student, and it would save half the time of the teacher, though it might call for more preparation and thought on his part.

Of course such an organisation of the teaching of an agricultural college would demand a new kind of discipline, but the passage from school to college ought to be marked by a growing responsibility of the individual for his work. In short, while it may be reasonable enough for a school to adopt a routine which keeps a boy at work by filling up his whole time, a college is not really educating its students unless it generates a spirit of personal study. A keen staff will always breed keen students, and though there would be some who would misuse the freedom, they should early be invited to withdraw. A short way may be taken with idlers when their fees are far from paying their share of the cost of the establishment.

In another direction again economy is possible—the colleges must to a certain degree specialise in the type of instruction they give. Every college should not endeavour to cater for every type of student who may present himself or an otherwise adequate staff may thus find itself swamped with a multiplicity of courses and lectures for special ends. A college has been known to offer courses preparing for its own diploma and certificate, for a University degree, for the National Diploma, and for that of the Surveyors' Institution, not to mention side issues like horticulture or dairying. Particularly it is only a limited number of colleges who can afford to offer the highly specialised scientific courses that are required for the training of scientific experts or investigators. In the first place such men should have begun by obtaining a university degree in pure science before they turn over to agriculture. An agricultural chemist who is to be capable of independent investigation cannot find a sufficient foundation for his life's work in the sort of chemistry course which may appropriately be given to a farmer, or even in preparation for a degree in agriculture. Only a very few institutions like the School of Agriculture at Cambridge can command the right sort of raw material for the production of the scientific teachers or experts, or can afford the elaborate organisation of laboratories and lecturers needed to train them. Since all the agricultural colleges cannot hope to be equipped like Cambridge, the majority will do better to leave the expert type of man out of account and aim at producing farmers. They will still be able to provide for a few men doing advanced scientific work, but they should be men who have previously graduated in pure science elsewhere. It is indeed desirable that some measure of specialisation should be developed within the range of practical agriculture itself, that one college should come to be recognised as associated with dairy farming, another with market gardening and fruit growing, another with the poultry industry, and so forth. Finance alone will not permit of all the colleges being equally equipped in all directions, and the authorities of a particular college will be better advised to endeavour to make their institution pre-eminent in one type of instruction rather than indifferently equipped for all.

Considerations of economy immediately raise another question —what should be the function of the college farm, what purpose should it serve, and to what end should it be managed ? Is it to be a business farm showing both students and the farmers of the locality how farming ought to be conducted, or is it to be an experimental farm demonstrating the effects of different kinds of cultivation and fertilisers, the new varieties of crops, improved live stock and the use of various rations or newer kinds of feeding-stuffs ? Often the management halts between the two points of view ; there is sure to be a party on the committee of management who holds that the college farm must set an example to the district, and that if the college cannot make it pay it is no good pretending to teach farming. At the same time there is a constant pressure from one source or other to try this or that experiment, to demonstrate varieties of crops or stock, even if it is only to have something to talk about to students and to the farmers who visit the college. But as soon as the strictly commercial management is interfered with the farm ceases to be a business proposition, bad balance sheets become inevitable and a lot of dissatisfaction and criticism springs up, to the detriment of the good repute of the college. It is important to find some guiding principle. Clearly the farm exists primarily for the college, and the purpose of the college is the education of its students ; and, again, the main end of that education is to teach management. Scientific experiment and the instruction of visiting farmers should be subordinate aims.

Now how can the farm be used to teach management ? It must be the teacher of agriculture's textbook, out of which he demonstrates what is to be done, when and why it is to be done, how men and horses have to be arranged in order to do it, what it costs in time and labour—in due course what the returns and receipts are. The teacher must possess and must pass on to his students complete records of the work done day by day and field by field, together with a continued statement of expenditure and receipts. At the beginning of each week he should expound the forthcoming programme of work, his organisation of the available labour in order to carry it out, and the alternatives he has in mind to meet the weather. The student should keep a detailed diary of what actually has been done and a working set of accounts out of which he can construct a profit-and-loss account at the end of the year. Of course the use of the farm for teaching purposes does not end here ; it affords opportunities for demonstration of live stock from the point of view of breed and conformation and of condition, of implements and cultivation, and, again, it provides students with the means of practising the manual operations. It is, in fact, to the teacher of agriculture both textbook and laboratory.

But if the farm is thus to be used for teaching management, it almost of necessity follows that it must be conducted on commercial lines, not on experimental ; it must be made efficient in a business sense, and it should aim at paying its way. In some respects it is handicapped, because very complete records and accounts must be kept for use in teaching, everything consumed and produced must be weighed, nothing can go unrecorded. The farm will, in fact, need a recorder and book-keeper who cannot reasonably be debited against the business. Demonstration, again, and instruction of students in manual operations causes some waste of labour and interference with the routine, which should be borne in mind when considering the showing of the profit-and-loss account, though it is difficult to make a cash allowance to meet it. A College farm must, again, be kept a little more tidy and brushed up than sheer business demands.

Again, for educational purposes it may be necessary deliberately to adopt a system of farming unsuited to the conditions. If the farm were on heavy land it might be most businesslike to lay the whole away to grass, but a farm would be useless for teaching purposes unless it possessed a reasonable acreage under the plough. Again, it will often be desirable to keep a milk herd or a breeding flock, when a practical farmer might hesitate about the prospects of profit from either. In the main, then, the farm should be conducted on business lines and aim at making a profit; at the worst it should not involve the college in any great expense.

Should, then, there be no experiment, no investigation or demonstration for the benefit of the farmers of the district? The teachers of chemistry and botany need a certain amount of demonstration in the open just as much as in the laboratory; there must be some land given up to demonstrations of the action of manures, of such things as the effect of thick or thin seeding, or of sowing at different depths or times. But this kind of work can be kept together on small plots, entirely dissociated from the general work of the farm, with a special account against it. Plot experiments upon the crops of the farm should rarely be attempted, whether it be the trial of different varieties of wheat or the comparison of the effects of varying quantities of nitrate of soda, sulphate of ammonia, cyanamide, etc. In the first place, real plot work is very expensive in labour; before the war it used to cost Rothamsted or Woburn at least £10 an acre to conduct plot experiments over and above the value of the produce and without charging rent or management; and however simple it may seem to set out a series of plots in a field of a given crop, expense on that sort of scale will be incurred. Again, plot experiments can teach little unless they are conducted with far more care and elaboration than has been customary. It has been proved up to the hilt that comparisons of, say, varieties of cereals by means of single plots are utterly without value, because the experimental error involved is far greater than any yield difference between the varieties, and manurial trials are no freer from error. A college farm may legitimately demonstrate one or two of the newer varieties of wheat when it can give a field to each, but it can hardly become the testing-place for a dozen varieties except as far as an eye test will serve, and this can be obtained by growing a few drills of each in the botanical teacher's experimental area. At any rate, the two functions of testing and farming must be kept distinct, and whichever is embarked upon must be done thoroughly.

There is the further question of real investigation. The teachers in the college, whether in agriculture or agricultural science, will just in proportion to their quality have problems to solve, points to elucidate for the benefit of the industry; are they to get no chance of testing out their theories by practice upon the college farm? Of course they must be given their proper outlet; their work will become sterile otherwise. But such work should not be entered upon lightly. The author of the scheme should submit his proposal to his colleagues in council, its cost should be carefully estimated and agreed in particular with the officer in charge of the management of the farm; finally, the proposal should go before the Farm and Finance Committees for approval, because the cost should be charged against the experimental and not against the farm account. It is not that one wishes to restrict investigation—far from it—but it should be investigation that is really worth while and has been well thought out, and it must not be allowed to destroy the economy of the farm.

Another question sometimes arises in connection with college farms—in whose hands should the responsibility for the farming be placed? Naturally the Governing Body appoints a Farm Committee, and this committee is often disposed to assume direct responsibility and to appoint à bailiff or manager answerable to the committee and independent of the Principal of the college or the teacher of agriculture. Such a procedure must defeat the educational aim of the college; human nature being what it is, farm manager and teacher rarely pull together, but criticise one another's opinions. The teacher's authority with the students is destroyed when he is thus set down as incapable of farming, nor can he in practice obtain the kind of detailed information he needs for his teaching. Above all, he cannot go on learning himself as he ought to learn by experience; he must remain a man speaking at second hand and not of what he has done. The committee may plead that they don't consider the teacher experienced enough to farm; it is better to let him learn even at their expense, or to find another man who can farm. Possibly a man may be a good teacher but a bad farmer, though such cases must be rare and will become rarer as responsibility is early thrown upon the teachers; but it would be more correct to say that no man can be a good teacher unless he is also capable of the practical conduct of a farm. It does not follow that the Farm Committee divest themselves of responsibility. The manager of the farm should submit to them annually his programme, his scheme of cropping, manuring and seeding, his proposed purchases of live stock and feeding-stuffs, his estimates, and the committee should review the programme in the light of results from quarter to quarter or month to month. The committee can still exercise complete control, can review and criticise, and members of it can be of the greatest possible assistance to the manager by their personal advice. The alternative of farming direct by the committee does not of itself ensure financial success; the action of a committee too often represents the least common measure of the wisdom of the individuals comprising it. Cases may arise where it is necessary to appoint for the management of the farm a man who has had no teaching experience. None the less, he should be made a member of the teaching staff and he should give lectures expository of his management of the farm. The Principal of the college should at the outset discuss these lectures with him in the fullest detail and explain to him what exactly he has to do to make his discourses fit in with the general course of instruction in agriculture. Either the man selected for his teaching must learn to farm or the man selected for his farming must learn to teach, and the Principal can give him some instruction in the art of imparting knowledge.

The Agricultural Colleges can, however, provide for the instruction of but a small proportion of the total farming population. They are intended, as has been said above, for the training of the larger farmers and for the men who are going to become teachers, experts or officials.

The Farm Institutes, of which it is hoped one will eventually be attached to each county or group of counties, are intended for the instruction of the much larger numbers of the sons of farmers who cannot leave the farm for the whole of the year, but who can very profitably take short courses of instruction in the winter months. The danger has often been recognised that the college course of instruction, which absorbs the whole time of a youth for two or three years, may detach him from the land. The aim of a Farm Institute is to give instruction which will not constitute any real break in the continuity of the young farmer's apprenticeship upon his father's or some other farm. The essential note, then, of a Farm Institute as distinguished from an Agricultural College is that it conducts its instruction by means of short courses of ten or twelve weeks' duration before and after the New Year. The ideal state of things would be that the young farmer should attend one of these courses of instruction for three consecutive years, but as a rule the Farm Institutes are now organised to complete their course of instruction in two sessions, one before and one after the New Year. It is not as a rule advisable to attempt to draw up a course founded upon one continuous year's instruction. Such a course is educationally somewhat of a hybrid in that it becomes an abbreviated but spoilt college course, while it takes the student away from the farm at the time when his services are of the most value and when he should be learning the practical side of his work by apprenticeship.

The authority in charge of Farm Institutes, and indeed of all forms of agricultural education below the colleges, is the *County Council, and the Ministry has indicated to Local Education Committees, whether they are set up under the Agricultural* Committee or the Education Committee of the County Council, the form of organisation which it considers most desirable. In the first place the Ministry is anxious to see appointed in each county an Organiser, whose duties will be to act ahead of the Farm Institute but who will also direct the staff of instructors employed within the county and generally will initiate and control the various experimental plots and other educational activities that are set up as the intelligence service for the farmers within the area. Since the instruction given by a Farm Institute is severely limited in time, careful consideration requires to be given to the subjects which can with profit be undertaken and which will be of service to the students who attend. It must work to a very large extent by stimulus. It should aim at putting students in touch with modern methods of farming and enable them to continue their education at home later. It should show students how to read and what to read, so that they can make the best use of books of the technical press and of the information and advice that is issued by the Ministry. Since the students at a Farm Institute are in the main young men coming from a farm and going back to it, and since again the instruction is mainly given throughout the winter months, it should not attempt to include training in manual operations, what is sometimes called practical work. This kind of training the student can best obtain upon his home farm. The object of the Institute course is rather to awaken the student's intelligence about these operations and provide him with a kind of comparative information that he cannot obtain if he is only brought up to know the routine of a single farm. The course of instruction must obviously in the main be concentrated upon agriculture itself; for example, the Institute course can deal with methods of cultivation and rotations from the point of view of results and costs. It can introduce the student to the consideration of the choice of seed and value of new varieties, and the varieties of fodder crops that are suitable for different soils in systems of farming. Without attempting to go into agricultural chemistry it can make the student appreciate the functions of lime and of the different fertilisers, the meaning of an analysis and the considerations that should guide the selection and purchase of manures.

Coming to live stock, the main principles of breeding and feeding can be elucidated, and again without any elaborate chemistry the considerations that should determine the choice and purchase of feeding-stuffs. The student should be shown how to make use of the published information as to the composition of feeding-stuffs and the compounding of rations for milk production, or fattening.

From the earliest stage the student should be introduced to the meaning and value of a simple system of book-keeping adapted to the small farm, and his eyes should be opened to the necessity of checking the consumption of labour against the work done and the results of all farming operations by their costs. Where an Institute possesses a farm it cannot be greatly used for direct teaching, but its records of cost and labour should provide a basis for much of the instruction on farm management.

Naturally, with the limitation of time only a restricted amount of scientific instruction can be given. It will be possible, however, to devise a course which will enlighten the student upon the fundamental scientific conceptions of how a plant grows and how an animal lives ; the latter instruction leads naturally into a very necessary course of simple instruction in the hygiene of farm animals without any attempts at specific veterinary instruction. Throughout all the instruction care should be taken to introduce the student to such simple books, leaflets and other sources of information as will enable him to extend his knowledge and to utilise in a practical way the information that is available. The student should be encouraged to look upon the Farm Institute as his future source of help in difficulties, a place to which he can come back whenever he wants further information or guidance. It will often, no doubt, be possible for the Institute to organise special short courses, perhaps for a week only, on specific questions of importance to the district, as, for example, the production of clean milk, pig-feeding on the open-air system, or other practical topic that is engaging the attention of farmers at the time.

Some consideration should now be given to the question of whether the Farm Institute should possess a farm of its own, and if so, for what purpose should it be used ? From the point of view of the students at the Institute a farm is not necessary, they are only in attendance during a portion of the year, and that the winter, they are in the main farmers' sons who have come from and are going back to the farm, and so have the less need of instruction in the routine of farming. Like college students they need instruction in management, but the short period for which they are resident renders it impossible to give this instruction direct from the farm itself. One of the best of the Farm Institutes in the country, that at Chelmsford, has always done its work without a farm of its own.

But if we consider the Farm Institute as the seat of the County Organiser and the County Instructors with responsibilities towards the farmers at work in the county, then there is a strong case for attaching a farm to the Institute. Its object, however, is different from that of the College farm; it is not there to teach management to resident students, but to provide for experiments and demonstrations for the benefit of men engaged in the industry. It can hardly, therefore, be run as a business proposition intended to earn a profit. As already indicated, experimental work must cost money, and the problem before its managers is just how much loss they can afford and therefore upon how much experimental work they can embark. But the costliness of experiment and the necessity of thoroughness in it must be faced; half-hearted work that becomes slipshod because of the effort to minimise the cost is of no use to anyone. The experimental farm may profitably lay itself out to show a good series of manurial tests appropriate to the soil, experiments in cultivation, rate of seeding, time of sowing, demonstrations of the newer cereals and other farm crops, feeding trials appropriate to the farming of the district, comparisons of cross-bred and pure-bred stock and the like, only limited by the expenditure that can be afforded. Again, the farm may be set aside wholly or in part to demonstrate a system of farming—the growth of fodder crops upon arable land for dairy cows, a rotation based upon silage instead of upon root crops, and so forth. The point is that the Institute farm, as distinct from the College farm exists for the purpose of experiment and demonstration; it cannot be expected to pay its way, and its size and the extent of experiment carried out must be determined by the amount that can be set apart for the purpose.

It will be noted that the course of instruction at an Institute as indicated above is self-contained and complete in itself. It is not designed to be an introduction to the course at the College nor to form a stage in a kind of educational ladder that ends with the College or University. Occasionally there may be found students who, after their course at the Institute, may prove of such capacity that it may seem desirable to give them a higher form of education; but such cases will be exceptional. The proper preparation for a College course is not a preliminary canter over the whole field of agriculture, but a sound general education of a secondary school; and from the other point of view the whole character of the course of instruction at the Farm Institutes would be spoilt if it had to be designed as a preparation for the Colleges. Its prime object is to deal with people coming from a farm and going back to a farm, and it must adapt both the nature and style of the instruction given to these limitations.

Having devoted the winter months to the education of the farmers' sons and, incidentally, of a few women who wish to farm on their own account, the Farm Institute should provide a third course in the summer, of three or four months' duration, for the instruction of the farmer's wife or daughter. The object of the course should be to render the woman student an efficient partner in the management of a small farm. The course of instruction on the agricultural side would deal with the care of live stock, especially dairy cows, poultry and pigs, and with the management of a dairy and garden. The domestic side of the course should include the preservation of foodstuffs, *e.g.* jam-making, fruit bottling, bacon curing, and with cooking and housewifery generally—whatever is necessary to make the woman an efficient participator in the economy of a farm. It should not aim at teaching women to farm ; those who so desire should share in the men's course of instruction.

The number of Farm Institutes now at work in England and Wales is twelve; several others have been projected, and in some cases preliminary steps have been taken for their establishment, but progress is for the time suspended because of the call for economy in all national services. Such Institutes as have been set up since the Armistice have naturally suffered heavily in their farming operations from the fall in values, since the stocking of the farms was carried out at a time when prices were at their highest. Students have, however, been coming forward freely, and already some 80 per cent. of their available accommodation is taken up by students.

It will not be necessary here to discuss the remaining machinery of agricultural education, carried out as it is by lecture courses and classes in the towns and villages. In some instances these classes have been organised so as to constitute systematic courses of instruction at convenient centres in the country. Indeed, it is desirable to experiment further in this direction and see if the purposes of a Farm Institute cannot be attained in this manner without going to the expense of buildings. What is needed is to plan out a series of lecture courses, followed by discussion and class work, linked to one another and extending over a period of, say, three years, so that the whole field of agricultural instruction is thereby covered, though each course may be complete in itself. The technique of courses of this character requires careful consideration ; the shortness of time prevents the systematic and detailed treatment of the subject that is possible in a College or even in a Farm Institute. The teacher must pick out some salient aspect, and must be vivid and stimulating in his treatment of it; for the rest he must indicate where the information is to be found and what to read. Much may be done by discussion after the lecture, and this should not be merely question and answer; those attending should be encouraged to prepare themselves beforehand to deal with some aspect of the subject. A reading circle and a travelling library should also be organised in connection with the courses. There is everywhere a desire for knowledge, but the organiser or instructor must forget the formal methods of the class-room in which he himself was taught; he must not merely give a lecture but make his students, of whatever age, feel that they are participators in a collective effort of self-instruction.

There remains a considerable field of agricultural education that is still hardly touched, that is, the technical training of the young labourers. On all sides one hears complaints from farmers that much of the old craftsmanship is dying out among the labourers, that only old men can be found for such skilled operations as thatching, laying hedges, draining, etc. In some cases the County Councils are organising classes, in other the Agricultural Societies help by holding competitions, but speaking generally, this field of work is neglected and requires consideration. It is not merely manual training that is wanted, but the quality of the labourer can be improved by giving him some instructions in such matters as the care of stock and the use of machinery.

It is sometimes argued that the farmer himself ought to attend to the training of his labourers, but the fact remains that the boy who comes upon the farm is usually kept at work at the most mechanical sort of jobs during his receptive period of life, without any thought for his future. It is left to his own initiative or to accident whether he learns any of the finer arts of the agricultural labourer. It must be for the farmers' organisations to set about the improvement of this state of things; the County Organiser may help, but he is powerless without the active collaboration of the farmers, because the work must be done locally, on a farm and in working hours, and under the guidance of the best craftsman the district can produce. The Ministry of Agriculture recognises the need, but can take no direct action; for the time being its efforts must be mainly directed towards completing the scheme of education at the Agricultural Colleges and Farm Institutes. It is through these centres that the farmers of the next generation should pass; if their intelligence can be awakened to the power that science, organisation and training can give them, they can safely be left to work out the future of the industry.

A. D. HALL.

21, Hanover House,
Regent's Park, N.W.8.

WHEAT BREEDING EXPERIMENTS.

At the Royal Agricultural Society's Show in 1922 an attempt was made by the Plant Breeding Institute of Cambridge University to show by means of an exhibit in the Educational Section the methods used in breeding improved types of the more important farm crops.

The whole procedure of plant breeding, though simple in reality, is difficult for those who have not followed the modern work on heredity to grasp at the outset. There is, however, no necessity to go deeply into the scientific side of the subject, for an example or two will give a sufficiently clear idea of the general lines on which improved plants, more particularly of the cereals, are raised. To begin with, assume that two sorts of wheat, Square Head's Master and Rough Chaff, have been crossed together. The hybrid plants which develop from the cross-bred grains show the red colour of the former parent and the velvety chaff of the latter. These hybrid plants do not come true to type from seed, but they give a mixed offspring consisting of four types, viz. :—

(*a*) Red, velvety.
(*b*) White, velvety.
(*c*) Red, smooth.
(*d*) White, smooth.

Of these (*b*) white, velvety and (*c*) red, smooth are counterparts of the parent types, whilst (*a*) red, velvety and (*d*) white, smooth are new types resulting from the crossing. These new types arise from a regrouping of the features or " characteristics " present in the parents. In (*a*) the velvety characteristic associated with whiteness in the parent Rough Chaff is now associated with the red colour of Square Head's Master, and similarly in the form (*d*) the white colour of the velvety Rough Chaff is now associated with the smoothness of the chaff of Square Head's Master. No other groupings of these four characteristics occur and none are conceivable. Crossing does not lead, as is still often assumed, to the production of an indefinitely large number of types, but simply to the orderly regrouping of the characteristics of the parents and consequently to the production of new types. When, however, the parents differ from one another in more characteristics a larger number of new types result. For instance, assume that April Bearded Wheat instead of Square Head's Master has been crossed with Rough Chaff, *i.e.* a smooth-chaffed, red, bearded wheat with one with a velvety, white chaff and no beard. The offspring of the hybrid are now found to consist of eight distinct types as follows :—

Beardless	Red, velvety (*a*)	and Bearded	Red, velvety (*e*)
	White, velvety (*b*)		White, velvety (*f*)
	Red, smooth (*c*)		Red, smooth (*g*)
	White, smooth (*d*)		White, smooth (*h*)

but of no others. The regrouping in this case results in the production of six types, (*a*), (*c*), (*d*), (*e*), (*f*), (*h*), differing from the parent wheats, and two, (*b*) and (*g*), resembling them.

Where the parents only differ from each other, as in these examples, in some two or three respects, the offspring of the hybrids constitute a simple group of forms, but where crosses are made with a wheat like Rivetts, differing in many features from the ordinary bread wheats, the offspring are so diverse as to justify the belief, until a careful examination is made, that crossing actually " breaks the type " and leads to the production of an indefinite number of new forms.

This regrouping is the only method the plant breeder has for producing new forms. He cannot make a new characteristic and can only work with existing ones. If the unlikely demand for a wheat with green grains was made he would be powerless to produce it, but he could readily raise any number of sorts with purple grains, for this latter colour is already in existence in certain sorts of wheat grown in Abyssinia.

The majority of those characteristics which have been investigated in the cereals segregate in the manner illustrated by these two examples. But exceptions, which can only be described from a plant-breeder's point of view as unfortunate, occur. For instance, the naked oat of China possesses a characteristic one would like to see in our ordinary oats, namely a large number of grains per spikelet instead of the usual two or three. This feature is associated with one generally considered to be bad, namely that the grain itself sheds readily from the chaff and is consequently naked instead of being husked. Arguing from analogy, it would appear to be a reasonable expectation that if the Chinese oat (many grains, loose chaff) were crossed with, say, the oat Victory (few grains, close chaff), the combination of many grains and close chaff should occur. It does not, however, and all of the offspring of the hybrids show either the many grains and loose chaff of the one parent or the few grains and close chaff of the other. The features of many grains and loose chaff are in some way linked together and they fail to separate. This linkage appears to be absolute, for thousands of plants from the generation raised from the hybrids have been examined without finding an exception. Where linkage of this kind occurs further progress is definitely barred.

The new forms resulting from cross-breeding do not necessarily breed true from the outset, but they can readily be obtained in as stable a condition as any of the oldest types in existence. The common belief that they tend to "hark back" to the parental forms is but a relic of pre-Mendelian days kept alive by mistaking accidental admixtures of other sorts for "reversions" and by the occasional marketing by seedsmen of new sorts which have never been properly bred true to type. Further, once fixed, they are incapable of further improvement by any form of "selection."

On these few facts the improvement of plants by cross-breeding is based. But the matter has not proved as simple in practice as this short summary might indicate, for several essential gaps in our knowledge of the crops have had to be filled in and the process has been a lengthy one.

The first step in improving plants is to get a clear idea of what is required. For the day of making crosses at hazard, trusting to find amongst the descendants of the cross-breds some form which is an improvement on the parents, has passed, and now it is recognised that the parentage has to be purposeful if the results required are to be obtained. A consideration of the defects of any crop—for instance wheat—helps largely in attempting to visualise the ideal type. When this is attempted one begins to realise how good, on the whole, our English sorts of wheat are, particularly perhaps some of the older sorts such as Square Head's Master, Browick and Rivett. They crop exceptionally well, giving a yield per acre double or more than double that which most of the great wheat-exporting countries can produce. Further, they are, as a rule, healthy, and though losses occur practically every season from the attacks of fungoid pests, the crops are never damaged to anything like the same extent that they are, at times, in other countries. But if more or less satisfactory in these two important respects, wheat fails badly in another. The quality of the grain is far from ideal from the consumer's point of view, and consequently prices are low compared with those given for wheats of better quality for bread-making purposes. The importation of wheat, especially from Canada, has made the consumer critical, with the result that a loaf made from such a sort as Rivetts or Victor or Iron would be unmarketable in most parts of England. Unfortunately, too, as the public appreciation of light, well-risen loaves has increased, English wheat, never of the best quality, has depreciated appreciably. As a result much of the wheat grown here has been difficult to market even in times of wheat shortage.

One step to be taken then in building up an ideal type is to associate good baking quality, technically known as "strength," with the good features such as heavy cropping capacity and disease resistance of most of our wheats.

At the outset of the investigations on the possibility of doing so, the question whether "strong" wheat could be grown here had to be answered, for the statement was freely made that the quality of the grain was mainly determined by climatic conditions. The excellence of Canadian wheat, for example, was ascribed to a summer climate assumed to be especially favourable, in some unknown way, for the production of strength. Others again considered it was due to the virgin soils of that country, whilst others called in yet other factors to account for it.

A lengthy enquiry showed that many strong imported wheats when grown here lose this characteristic more or less completely in the course of a season or so, and thus justified, in part, the contention that strength was determined by climatic conditions. But exceptions were found, and of one of them, Red Fife, it may now be said that twenty years of cultivation in this country have not robbed it of its excellent quality. A well-harvested English-grown sample is the equal of the Red Fife exported from Canada under the description of Manitoba Hard.

The climate then is no bar to the production of strength, and were Red Fife only a better cropper it would, by now, be very generally cultivated here. But its yield per acre is too low to allow of this, amounting as it does, on an average, to only some two-thirds of the crop of an ordinary English sort.

As soon as these facts had been demonstrated the problem of building up a heavy-cropping strong type was attacked. Various crosses were made between the commonly cultivated, *i.e.* heavy-cropping sorts, with Red Fife, and numerous selections were made from the various forms arising in the generation raised from the hybrid plants. The making of these selections had to be largely a matter of guesswork for the reason that the appearance of a single plant gives no reliable information with regard to cropping capacity. Neither does it give absolute information with regard to the quality of the grain, for though strong wheats almost always have flinty, translucent grain, such a wheat as Square Head's Master may, at times, produce a translucent sample with much the appearance of a strong wheat. As the translucency in such cases is largely determined by soil conditions —a rich soil tending to produce this effect, and an average or poor soil to produce grain with the more characteristic soft and opaque endosperm—the mere growing of the plants on land in a comparatively low condition of fertility proved a considerable aid when attempting to pick out strong types. The appearance of the grain, however, proved inadequate by itself as a basis for selection and supplementary tests had to be applied. These were partly chemical, partly physical. The former involved determinations of the total-nitrogen percentage of the grain as an index of the quantity of gluten present, the latter gave some idea of its toughness and tenacity. No great reliance could be placed on either of these tests, for the grain which could be spared from a single plant left no margin for repeating them. Moreover, it was known that the total-nitrogen content of single plants was a feature which varied widely with conditions of cultivation and with degrees of ripening.

After discarding all forms with obviously low quality of grain and all showing other characteristics considered in any way undesirable, such as weakness of straw, liability to rust and indifferent setting of grain (all features characteristic of Red Fife itself), the remainder were sown separately on small plots, roughly a yard square, the grains being uniformly set at 2 in. intervals in rows 8 in. apart. These cultures of the third generation from the cross provided much useful information. A casual inspection was sufficient to show whether the new forms were breeding true to type in such obvious features as colour, ear-shape, length of straw, etc., and weighing up the produce of these uniformly sized areas gave data from which the cropping capacity could be roughly gauged.

After harvesting, the examination of the grain plant by plant showed in turn whether the culture as a whole was true to type or whether it consisted of a mixture of strong and weak-grained forms. At this stage the elimination of undesirable forms was carried on with a far greater degree of certainty than in the previous generation. The few forms surviving the drastic weeding out—not on an average more than 2 per cent.—were then grown on a larger scale and then, if still considered worthy of further propagation, the bulk of the grain (now at the fourth generation) from the cross was used for baking trials. Single plants were, however, drawn from the plots immediately before harvest to form the nucleus of the stocks to be worked up for distribution.

Up to the present the only sort with any pretensions to quality which has been grown at all extensively is the wheat known as "Yeoman." This is a free-milling sort markedly superior in quality to other English wheats. Its flour is sufficiently strong to produce a marketable loaf without the admixture of imported wheats, but it lacks the outstanding quality of Red Fife.

Since its introduction, far stronger types have been built up, and a series of photographs illustrating the results of baking trials showed that they were capable of producing loaves of practically the same volume and having the same characteristics as those of Red Fife. Sheaves of these wheats cut from the plots on the farm of the Plant Breeding Institute and samples of grain from the previous harvest demonstrated the fact that these new forms retain the good straw, the large ears and large grain of the English wheats and formed a marked contrast to the slender-strawed, small-eared sheaves of Red Fife cut from adjacent plots.

A second exhibit was put up to demonstrate the progress made up to the present in the production of rust-resisting wheats. The problem is of importance inasmuch as the yellow rust is an almost ever-present factor in diminishing the yield of the wheat crop. With the exception of 1921, when rust attacks were negligible, each year of the current century has seen this pest taking its toll of the crop.

The starting point of the investigation was provided by the pedigree of a wheat, probably extinct now, known as Red King. Its introducers stated that one of its parents was Michigan Bronze, a variety well known to mycologists for its extreme susceptibility to yellow rust. As Red King had this defect *in excelsis* the inference was drawn that susceptibility to yellow rust was an inheritable character. Steps were taken to test this by means of a series of crosses between Red King and Rivett wheat and Michigan Bronze and Rivett wheat, Rivett wheat being chosen for the purpose, as it is a variety which under ordinary conditions is very little attacked by the fungus. Whilst the investigations were in progress a few stray plants of an extremely resistant form were found in a mixed plot grown from a market sample of Duluth wheat. This unknown sort, known for convenience as "American Club" wheat, has subsequently proved to be nearly absolutely resistant to the attacks of yellow rust. Crosses were made with it immediately with a long series of susceptible sorts, and the whole of the extensive cultures from them have shown identical results.

The hybrid plants were susceptible to the attacks of yellow rust, but their offspring consisted of susceptible and resistant forms. This resistance was genuine and not in any way due to lack of opportunity of becoming infected, for, from the outset, every step was taken to secure infection by interspersing amongst the cultures small plots of wheats known to be intensely susceptible. By the beginning of June each season of the investigations the foliage of these latter was so rust-covered that the green of the leaf was no longer visible. Thousands of spores must have been carried from these by wind or rain-splashes to the leaves of the resistant plants, and transfer often took place from the contact of the foliage, yet they remained unscathed and stood out as green, vigorous plants amongst their rust-smitten neighbours. The grain harvested from these resistant plants in the many hundreds of examples tested gave rise to resistant plants only.

The capacity to resist the attacks of yellow rust was inherited independently of any other feature shown by the parents, and subsequent investigations have shown its independence of any recognisable feature in the many wheats experimented with.

These facts were demonstrated at the Cambridge Show by means of pot cultures showing both resistant and susceptible forms of all of the possible types resulting from a cross between American Club and the moderately susceptible wheat Wilhelmina. Apart from behaviour to rust, the chief characteristics of American Club are dense ears, bearded chaff and red colour, and of Wilhelmina, square ears and beardless white chaff. The regrouping of these resulted in susceptible and resistant forms of dense-eared beardless red and white, dense-eared bearded red and white, square-eared beardless red and white and square-eared bearded red and white wheats.

All sixteen forms were grown under the same conditions; in fact, in some cases the resistant and susceptible forms of the same type were sown in the same pot. Rust was unusually late in appearing in 1922, and a fortnight before the date of the Show it was thought that the demonstration would be a failure. But infection was secured by stacking the pots round and in a plot of an intensely susceptible wheat which at that date was beginning to produce rust spores in quantity, with the result that by opening day all of the plants previously known to be susceptible were obviously attacked.

A long-continued trial has shown that the resistant forms retain this capacity from year to year, even under conditions particularly favourable to the attacks of yellow rust. For instance, if abundantly supplied during the spring and early summer months with nitrogenous manures they remain rust-free, even though susceptible plants grown as controls and for the purpose of securing ample opportunities of infection are so badly attacked that they fail to produce grain.

The fact that this rust can be controlled by the comparatively simple expedient of breeding resistant wheats will prove valuable if agricultural conditions ever permit the intensive cultivation of the crop in this country. With most of the existing sorts any attempt to secure the maximum crop the wheat is capable of producing leads to a severe attack of this disease and consequently to a serious diminution in the potential yield of grain, This loss may easily amount to some 20 per cent. of the possible crop, and make all the difference between profit and loss on the extra expenditure incurred in cultivation.

Further investigations have shown that other fungoid pests can be combated by breeding resistant types, and there are now hopes that as time goes on the costly and often unsatisfactory method of attempting to control these by the application of fungicides will be dispensed with.

It is a fortunate fact that most of the plants cultivated as farm crops are represented by numerous sorts, and a careful examination of any extensive collection of them usually reveals differences amongst them in their response to the attacks of their particular fungoid pests. Sometimes, as in the case described, or again of the wart-disease of the potato, sorts occur which are either absolutely or almost completely resistant. These provide the starting point from which equally resistant sorts, but differing in other characteristics, can be built up. In other cases, as for example that of the blight of the potato, no outstandingly resistant sorts have been discovered. The most resistant types then have to provide the breeder with materials for hybridising, for there is evidence to show that degrees of resistance are inheritable in the same manner as complete resistance.

The ease with which the problem of controlling yellow-rust has been solved is not necessarily typical of the solving of other problems of disease control. An example of this was provided by the exhibit of a series of wheats obtained in an attempt to breed for mildew-resistance. This feature is rarely met with in wheat, and up to the present the one satisfactorily mildew resisting sort which has been discovered is one known as Persian Black wheat. Its one and only merit is the capacity to withstand the attacks of mildew; in every other respect, such as cropping capacity, stiffness of straw, quality of grain, etc., it is thoroughly unsatisfactory. This wheat is placed by Botanists in a different group from that containing the bread wheats, and when crossed with any of these latter many of the offspring of the hybrids are more or less completely sterile. None of the fertile sorts resembling bread wheats have, so far, been found to be mildew-resistant, so the possibility has to be faced that a linkage of this characteristic may exist with the bad features of Persian Black. On the other hand it crosses freely with the mildew susceptible Rivett and yields nothing but fully fertile forms in the generation raised from their hybrids. Amongst these resistant counterparts of Rivett itself are numerous. These will be used as parents in further attempts to breed resistant bread wheats, for they have the great advantage over the original Persian Black that they crop freely and possess straw of far better standing capacity.

Another problem which, when solved, may give results of value in agricultural practice is that of breeding better types of spring wheats. At present these are unpopular, and it is only when conditions for autumn sowing are unfavourable that there is any marked demand for them. Even the best types available show several faults, the most serious of which is the failure to crop sufficiently heavily. Their yields, unless well grown, tend to be nearer three than four quarters per acre. How far this is determined by the relatively short growing period is unknown, but facts are coming to light which indicate that the lack of time to produce a heavy crop is not the sole cause.

Wheats with a short growing period are very numerous; in fact, they easily outnumber the autumn sown sorts. A characteristic common to most of those grown at Cambridge has been bad setting, the spikelets only producing two or three grains in place of the three or four or even more of the wheats with longer growing periods. An exception was provided by two somewhat similar sorts obtained from the Szechuan Province of W. China which systematically set four or five grains in each spikelet. The ears, however, were small, and this feature combined with indifferent tillering made the cropping capacity unsatisfactory in spite of the good setting.

The well-filled spikelets were too intriguing to discard, and an investigation was planned to determine whether free setting was inheritable and concurrently to enquire into the inheritance of the habit of growing and maturing rapidly. For these purposes crosses were made with the Chinese varieties and Rivett and also with a number of sorts of bread wheats. Rivett was chosen as a parent primarily because it is the slowest growing wheat cultivated here. The cross-bred Rivett and Chinese grains were autumn sown, together with grains of each of the parents. Both the hybrid plants and the Chinese wheat flowered on May 24, and the grain of both was judged fit for harvesting on the same date in the middle of July. The Rivett flowered three weeks later and was correspondingly late in ripening. The produce of the hybrid plants was sown late in the following spring in order to take advantage of the fact that the late-maturing forms would be automatically weeded out by their failure to flower and set grain under such growth-conditions. Selections made from amongst the plants which ripened were found in the following season to ripen synchronously with the Chinese wheat, whilst others were repetitions of the hybrids inasmuch as they gave rise to early and late maturing types. This part of the investigation then left no room for doubt that the early flowering-early ripening habit was inheritable.

The bread wheat crosses showed the same result and further proved of interest in several unexpected directions, besides showing that the free-setting characteristic was inherited. The details of inheritance have still to be followed out, the problem being complicated by the fact that the number of grains per spikelet is not a constant character, like chaff colour for instance, but one varying widely with cultural conditions. Lack of precise knowledge on this point proved no bar to the isolation and fixing of a number of forms which were shown growing at the Show, as well as in specimen bunches from the 1921 crop.

The setting of these latter varied from five to eight grains per spikelet, and the larger ears carried from 100 to 120 grains each. Such a grain yield per ear had not been anticipated from spring-sown wheats. It was due to the fact that every flower in the spikelet had set—a feature of the Chinese parent—instead of two or three basal flowers only. These specimens had been grown under peculiarly unfavourable conditions the previous year. The grain was sown at the end of March. Germination, owing to the drought, was very faulty and irregular, and a more or less complete failure seemed inevitable. But the plants grew on through the rainless summer as if moisture was unnecessary for them. It so happened that a series of Mesopotamian wheats was being grown under similar conditions within a few yards of the plots, some of which had been collected in districts where the rainfall was said to be of the order of 5 in. per annum. They had grown satisfactorily under English conditions in 1920, but the drought of 1921 killed them out almost completely. The derivatives of these Chinese wheats, therefore, appear to possess an unexpected capacity for thriving under exceptional drought conditions. The feature is of little practical importance here, however, and the main value of these new free-setting forms is to be found in the fact that they provide fresh material for attacking the problem of increasing the yield of the wheat crop—a problem hitherto only attackable by building up disease-resistant forms with straw capable of standing under intensive cultivation.

R. H. Biffen.

School of Agriculture,
Cambridge.

MILK-RECORDING AND FEEDING FOR MILK AND BUTTER.

The practice of keeping a record of the quantity of milk yielded by the individual cows in a herd was known and adopted by a few progressive farmers in this country about the middle of last century. Some of these men tried hard to get their brother farmers to take up the practice, and the agricultural journals[1] from 1882 onwards contain occasional articles pointing out the advantages in the selection and breeding of dairy cows and in their feeding, to be derived from the study of records of individual yields. The earliest mention of milk-recording which the writer has been able to find is in a little-known book, published in 1829, entitled *The Harleian Dairying System*, and describing the pioneer work of Williams Harley in the production and sale of milk in the city of Glasgow. In Mr. Harley's cowshed " one day in every week at least (Friday was the usual day) it was the custom to measure the quantity of milk supplied by each cow, morning and evening " ; further, lactometers and milk tubes were used to determine the quality of milk yielded by each cow and in the selection for cream-raising of the milk which showed the greatest depth of cream.

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[1] *See Journal of the Royal Agricultural Society of England*, Vol. XVIII, Second Series, 1882, pp. 480, 482. Vol. IV, Third Series, 1893, p. 172. Vol. VIII, 1897, p. 136; and Vol. 73, 1912, p. 9.

The example of progressive dairy farmers ultimately stimulated some of the Dairy Breed Societies and some of the public bodies interested in agricultural education to promote milk-recording amongst groups of dairy farmers organised for this purpose, but development was deplorably slow until the initiation of a National Milk-Recording Scheme by the Ministry of Agriculture in 1914, as part of a comprehensive programme for the improvement of live-stock.

This scheme, which is now so well known that a detailed account is unnecessary, provides financial grants to properly constituted Milk-Recording Societies, and these Societies are responsible for the supervision of the records kept by the individual members ; in this work they co-operate with the Live-Stock Officers appointed for different districts by the Ministry of Agriculture.

PROGRESS OF MILK RECORDING.

Since 1914, in spite of the difficulties created by the war, the development of milk-recording in England has been remarkable. The rate of growth is best shown by the following table supplied by the Ministry, showing the number of Societies operating during each year since 1914, with the corresponding number of members, herds and cows.

Statement showing Progress of Milk-Recording Scheme.

	Year	Societies	Members	Herds	Cows
April 1 to March 31 .	1914–15	16	264	396	7,331
Do. .	1915–16	20	250	398	9,811
Do. .	1916–17	22	441	495	12,950
Do. .	1917–18	25	503	555	14,404
October 1 to October 1	1917–18	27	639	708	19,793
Do.	1918–19	38	1,191	1,332	37,880
Do.	1919–20	46	2,075	2,312	61,323
Do.	1920–21	52	3,328	3,664	97,903
Do.	*1921–22	55	3,921	4,300	100,933

* In the absence of complete returns these figures are approximate.

Note.—The uniform milk-recording year was not fixed until October 1, 1917, and the figures prior to that date are those for the financial year April 1 to March 31.

It should be added that there is a great variation in the membership of Milk-Recording Societies : in some counties there is only one large Society, *e.g.*, Essex, with a membership of over 170, and recording over 6,000 cows; in other counties, such as Somerset, Wilts and Gloucester, there are several small Societies, each dealing with a different district which takes no cognisance of county boundaries.

In addition to the work carried on under the auspices of the State-aided Milk-Recording Societies, several of the Dairy Breed Societies initiated and developed schemes of their own, differing slightly in method from the National Scheme, and in some respects more suited to the needs of a particular breed. Recently, the Dairy Shorthorn Association, the British Friesian Cattle Society and the English Guernsey Cattle Society have advised their members to join local Milk-Recording Societies, and in the course of time it is to be hoped that all British Dairy Breed Societies will have the records of their cows taken, checked and certified under the Ministry's scheme.

The main object of milk-recording is to enable the dairy farmer to know exactly the yield of milk produced by the individual cows in his herd, so that he may weed out and select in order to obtain higher yields in succeeding years. This information may be obtained by private recording, but private records do not carry the same confidence in the case of sales of stock as those which are checked by some independent authority; further, the organisation of a Society, which acts as the checking authority, provides the means whereby much additional information of prime importance, such as butter-fat and food records, can be obtained by the individual member at the minimum expense.

THE USE OF MILK RECORDS.

The importance of the use of milk records can hardly be overestimated ; the keeping of a milk record may afford an almost immediate means of improving the milk yields of a herd, but real improvement of a herd and of any and every dairy breed must depend on the breeding of young stock which are better than their parents—the heifers reared to maintain the stock must be better milkers than their dams. This point of view has led to greater attention being given to the milking ancestry of the bulls used. The influence which a bull exerts in a dairy herd can best be shown by comparing the yields of dams with those of their daughters by a particular bull. From the milk and breeding records of the small Dairy Shorthorn herd maintained at Reading University College Farm

I have obtained the following figures which illustrate this point:[1]

Progeny Records of Bulls.

	Bull A		Bull C	
	Dams	Daughters	Dams	Daughters
No. of Animals	8	8	9	12
No. of Lactation Periods . . .	20	20	20	25
Aver. Yield per Lactation Period —lb.	8,518 lb.	8,479 lb.	8,001 lb.	6,468 lb.
Loss per Lactation Period—lb. .	—	39 lb.	—	1,533 lb.
Average Lactation Period—weeks	46·4	44·3	43·3	38·3
Average Dry Period—weeks . .	10·0	11·3	10·1	13·6
Average Period between calvings —weeks	56·4	55·6	53·4	51·9
Gain between calvings—weeks .	—	0·8	—	1·5

The above comparison shows that bull " A " was capable of siring female progeny practically as good as their dams, which were carefully selected cows of good Shorthorn type; the progeny of bull " C," on the other hand, showed a decrease per lactation period of almost 150 gallons when compared with their dams and definitely lowered the average yield of the herd. Unfortunately, bull " A " was sold for slaughter before the first of his daughters came into milk. Undoubtedly one of the lessons which milk-recording brings home to the breeders of dairy stock is that bulls which get promising calves should be kept alive and useful until their heifers have come into milk; if the heifers prove to be really good, their sire immediately increases in value—his value as a dairy bull has been *proved*—and should be kept for breeding purposes as long as possible.

A close study of milk yields brings out many other points of great interest to the dairy farmer. Over 4,000 lactation records have been analysed at the National Institute for Research in Dairying, Reading, and from these it appears that the period of maximum yield in a cow's lifetime is after the fifth or in some cases the sixth calf; with heavy milking cows, however, which have been well fed and managed in their first lactation period, the time of maximum yield may be after the fourth calf. It can also be shown that autumn and winter calving cows give appreciably larger yields than late spring and early summer calvers—the difference may be from 50 to 100 gallons in favour of the autumn calver. The chief factor in obtaining high yields from autumn and winter calvers is the amount of response given to the early spring grass in April or May. Only a very good milker calving in October is capable of responding appreciably to spring grass; a poor milker calving in October will be so nearly dry by May that the grass makes little or no difference, whereas had the same cow calved in March, the " second flush " due to the grass would have maintained her at her maximum daily yield for the longest possible time.

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[1] *See also* " Breeding Dairy Cattle for Milk Production," by J. Mackintosh, *Journal of the Ministry of Agriculture*, October, 1920, Vol. XXVII, p. 647.

BUTTER-FAT TESTING.

The improvement of milk yields through the keeping of records should never be dissociated from the quality or chemical composition of the milk, and it is regrettable that in England progress in the testing of the milk of individual cows for the percentage of butter-fat has by no means kept pace with the recording of yields. One explanation of this fact is that, with rare exceptions, producers get no higher a price for milk of 4 per cent. or 5 per cent. fat, than for milk which contains just over the so-called " standard " of 3 per cent.; the additional fact that some 70 per cent. of the milk produced in England and Wales is sold through this unappreciative market may account for the Ministry of Agriculture's Scheme being optional as regards the fat testing of the milk of individual cows. It is an interesting commentary on this aspect of the milk-recording scheme that the Societies of the Jersey and Guernsey Breeds—which breeds depend for their value more on the quality than the quantity of the milk—have shown little or no enthusiasm for the Ministry's Scheme, and in the case of the Guernsey Breed Society have promoted for some years a milk-recording scheme, including regular butter-fat tests for their own members.

The concentration of attention on yields, without a corresponding consideration of the percentage of fat may do an appreciable amount of harm by unconsciously lowering the average quality of milk. It is undeniable that a breeder, by concentrating on yields and neglecting quality of milk in the selection of cows and the purchase of bulls, may be steadily reducing the average quality of the milk of his herd, and if numerous breeders are working on the same lines the average quality of the milk of the breed as a whole will be reduced. There are difficulties in the way of any widespread development of butter-fat testing on reliable lines at the moment, but these difficulties will be gradually overcome. In the immediate future Milk-Recording Societies and Breed Societies (whether the respective breeds be noted for quality or quantity of milk) should impress on their members, for their own advantage, the importance of having tests made of the milk from their best cows, and particularly from those whose male progeny are good enough to keep as bulls.

On farms where the milk is made into butter or cheese there is much more inducement to have regular tests made of the percentage of fat in the milk, because the amount of butter and of cheese made from the milk of an individual cow or from the mixed milk of a herd is proportional to the percentage of fat in the milk. The following figures show how the percentage of fat influences the yield of butter, assuming all the milk to be made into butter and the butter to contain 85 per cent. of butter-fat.

Annual Yield of Milk	Percentage of Fat	Amount of Butter
6,000 lb.	3·5	247 lb.
6,000 lb.	4·0	282 lb.
6,000 lb.	5·0	353 lb.
5,100 lb.	5·0	300 lb.
6,375 lb.	4·0	300 lb.
7,285 lb.	3·5	300 lb.

The above comparisons show clearly the advantage to the butter-maker of finding out the good and bad "butter" cows, and they explain also why milk-recording and butter-fat testing of the individual cows has become so popular in Denmark and most other butter-producing counties.

THE USE OF BUTTER-FAT RECORDS.

It has been found possible in Denmark by the wise use of milk and butter-fat records to increase materially both the yield of milk and the output of butter from a herd of cows. In the absence of results of the same nature from British herds the following may be quoted as indicative of the improvement brought about in Denmark.[1]

Breed	Years	Yield of Milk per Cow	Butter Fat	Yield of Butter per Cow
			Per cent.	lb.
Red Danish	1905–06	9,427	3·40	356
	1915–16	11,282	4·30	546
Do.	1905–06	8,941	3·58	356
	1915–16	10,041	4·11	462
Jutland	1900–01	5,315	3·09	183
	1916–17	8,175	3·87	354
Shorthorn	1903–04	6,349	3·30	238
	1915–16	9,445	3·85	407
Do.	1901–02	6,864	3·62	277
	1911–12	10,164	4·06	460

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[1] "Improvement of Dairy Cattle in Denmark by Means of Milk Records," by H. Faber, *Journal of the Ministry of Agriculture*, October and November, 1921, Vol. XXVIII.

A further quotation from Danish records, showing how five bulls of the Jutland breed increased the percentage of fat in the milk of their progeny, as compared with the progeny's dams, is of great interest. The table also gives the calculated amounts of butter yielded by 6,000 lb. milk from the dams as well as from the daughters by the sires in question.

Bull	No. of Progeny	Average Percentage of Fat in Milk of		Calculated Yield of Butter from 6,000 lb. milk of	
		Dams	Daughters	Dams	Daughters
1. Assistent II . . .	66	3·50	3·87	234	260
2. Assistent Lom . .	49	3·47	3·84	232	258
3. Assistent Aksel . .	99	3·28	3·72	218	250
4. Assistent Toftcguard	26	3·27	3·63	218	242
5. Emb Britten . . .	46	3·36	3·71	224	250

Where the milk is made into cheese, the amount of saleable produce per head is again dependent on the chemical composition of the milk; the cheese is made primarily from the fat and casein of the milk, and the percentage of fat can be taken as an index to the amount of casein—milk rich in fat is, as a rule, richer in cheese-making solids than milk poor in fat, and will, therefore, give a higher yield of cheese. This relationship between the chemical composition of the milk and its cheese-making capabilities is shown by the following figures :—

Annual Yield of Milk	Percentage of Fat	Amount of Cheese
6,000 lb.	3·1	552 lb.
6,000 lb.	3·6	564 lb.
6,000 lb.	4·1	618 lb.
6,000 lb.	4·4	642 lb.
6,086 lb.	3·1	5 cwt.
5,957 lb.	3·6	5 cwt.
5,436 lb.	4·1	5 cwt.
5,233 lb.	4·4	5 cwt.

The above figures make it quite clear that the cheese-making farmer has much to gain by selecting cows which give milk rich in fat, and Milk-Recording Societies in cheese-making districts in England should make definite efforts to induce their members to have periodical tests made of the milk of all their cows. In the cheese-making districts of Scotland milk-recording and fat-testing have been carried on together since recording by Societies was first introduced in 1903, but up to the present no corresponding progress has been made in the cheese-making districts of England.

FOOD RECORDS.

The organisation of a group of dairy farmers into a district or County Milk-Recording Society also makes much more easy the collection of data on the cost of feeding a dairy herd, and facilitates the provision of advice to farmers on the preparation of a properly balanced or more economical ration. The keeping of Food Records with a view to improvements in the methods of feeding is specially mentioned as one of the main objects of the Societies organised under the Ministry of Agriculture's Scheme, but progress in this direction has been limited to a few Societies located chiefly in the south-east of England. This development has been due to the initiative of the Agricultural Colleges at Wye and Reading, and the Agricultural Organisers in adjacent counties, who, some years before the Ministry's Scheme came into existence, organised circuits of dairy farmers for milk-recording and investigation into methods of feeding.

ADVICE ON RATIONS.

The method usually adopted involves little extra work for members of the Society. At each visit of the recorder to a member's farm (and such visits must be made at intervals not exceeding six weeks) the member has the option of obtaining the recorder's assistance in weighing up the daily ration given to the herd and in entering it on the Food Record Sheet. This sheet is then sent to the advisory centre, where the daily cost of the ration, the cost of food per gallon of milk, and the composition of the ration is worked out; suggestions for improvement or economy in feeding are made, and a copy immediately returned to the member for his information and guidance.

A specimen of the Food Record Sheet at present in use in the Berkshire Milk-Recording Society is shown on page 52.

Where food-recording in conjunction with an advisory system has been taken up by Milk-Recording Societies, those members who have taken the trouble to weigh the ration given to their cows have in many instances been enabled to reduce appreciably

BERKSHIRE MILK-RECORDING SOCIETY
AND THE
NATIONAL INSTITUTE FOR RESEARCH IN DAIRYING.

FOOD ADVISORY SHEET.

Name. Mr. .. .. Date of Visit. *Nov. 28 and 29, 1921.*

Address Farm, Berks.

No. of Cows in Milk. *31.* Afternoon Yield. *272½ lb.* Morning Yield. *381½ lb.* Total, *654 lb.*

Breed of Cows. *Shorthorn.* Average Daily Yield. Per Cow: *21·0 lb.*

Daily Ration per Cow in Milk			**Not to be filled up by Recorder**		
				Composition of Ration	
Kinds of Foods	Weight in Pounds	Price of Foods per Ton	Cost of Ration per Day	Starch Equiv.	Dig. Albuminoids
		£ *s.* *d.*	pence.	lb.	lb.
1. *Oat and Barley Straw*					
2. *Chaff with Cabbage*	*56*	*2 0 0*	*12·00*	(est.)*5·00*	*0·70*
3. *Hay* (*prime*) . . .	*12*	*5 0 0*	*6·36*	*4·80*	*0·72*
4. *Malt Dust* . . .	*2*	*5 0 0*	*1·06*	(*est*). *0·60*	*0·18*
5. *Treacle*.	*½*	*9 5 0*	*0·50*	*0·26*	—
6. *Coco-nut Cake*. . .	*3*	*15 0 0*	*4·80*	*2·34*	*0·48*
7. *Bean and Barley Meal*	*2*	*12 0 0*	*2·58*	*0·66* *0·71*	*0·19* *0·07*
8. *Dec. Groundnut Cake*.	*2*	*14 10 0*	*3·11*	*1·46*	*0·82*
		Totals	*30·41*	*15·83*	*3·16*
			Standard Requirements	*12·45*	*1·88*

Remarks. The Cost of Food per gallon of milk is *15·0 pence.*

The cost of food per gallon of milk is higher than need be, because the ration is heavier than is required for Shorthorns of average size yielding just over 2 gallons daily.

I suggested omitting the dec. groundnut cake from the ration of cows yielding 3 gallons daily or less. Those yielding under 2 gallons daily may also have their coco-nut cake reduced by half. These reductions should lessen the cost of food per gallon by at least 2d. The full ration, as stated above, is only necessary for cows averaging 4 gallons daily.

(*Signed*) *A. B.*

the cost of milk production. The writer has published figures[1] showing for four farms a saving, during the winter of 1914–15, of respectively £72 16*s.*, £78 13*s.* 10*d.*, £26 16*s.* 10*d.* and £96 16*s.* 10*d.* in the cost of feeding, as compared with the costs during preceding winters. Savings of a similar nature are illustrated in the following extracts from one of Mr. G. H. Garrad's reports on Food Records in the Kent Milk-Recording Society[2]:—

	Winter 1920–21	
	1st Food Record	2nd Food Record
Number of Cows	505	481
Daily Yield per Cow—lb.	20·79	22·58
Cost of Food per cow per day—pence	33·39	31·00
Cost of Food per gallon of milk—pence	16·06	13·73
Reduction in Cost per gallon	—	2·33 pence

It is essential that the adviser on rations and feeding should have a sound knowledge of the composition of foods and the scientific principles governing the preparation of rations for different purposes, in addition to practical experience in the feeding of dairy cows. Further, it is most important that some information be supplied by the farmers as to the available home-grown and purchased foods, the breed of cows in the herd, and their present condition and daily milk yield; also the purpose for which the milk is produced—whether for immediate sale, for butter-making, or for cheese-making.

SCIENTIFIC FEEDING.

It is now generally recognised that the ration for a dairy cow must supply sufficient food materials for the "maintenance" or upkeep of the body in a normal condition (the maintenance part of the ration), and an additional amount varying in proportion to the amount of milk given or the need for increasing the live weight of the animal (the production part of the ration). The research work of many investigators in Europe and America, combined with the practical experience of dairy farmers in this and other countries, has led to the formulation of feeding standards for dairy cows, and the standards which the writer has found most suitable for English conditions are as follows :—

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[1] "Report on Cost of Food in the Production of Milk in Berks and Bucks," *Bulletin* XXVIII, by J. Mackintosh, University College, Reading.

[2] "The Value of Food Records in Connection with Milk-Recording Societies," by G. H. Garrad, *Journal of the Ministry of Agriculture,* February, 1922, Vol. XXVIII, p. 988.

Feeding Standards for Dairy Cows under English Conditions.

	Dry Cow in Calf		Cow in Milk	
	Starch Equivalent containing	Digest Protein	Starch Equivalent containing	Digest Protein
	lb.	lb.	lb.	lb.
For MAINTENANCE : (per 1,000 lb. live weight = 9 cwt.)	6·0	0·6	6·0	0·6
For PRODUCTION :				
(*a*) For Calf and increase in live weight	1·0	0·3	—	
(*b*) Per 10 lb. Milk of 3·5 to 4·0 per cent. Fat	—	—	2·5	0·55
(*c*) Per 10 lb. Milk of 5·0 to 5·5 per cent. Fat	–	—	3·0	0·66

The above standards are stated in weights of starch equivalent and digestible protein because these terms are probably the best known in this country, and a table showing the starch equivalent and percentage of digestible protein for the foods in common use is included in this article (*see* p. 59).

With regard to the maintenance ration for animals above or below 9 cwt. live weight, the quantities of nutriment should be increased or decreased in proportion. The maintenance part of the ration never constitutes the total ration in practice, because all cows are kept for production, and are either in calf, in milk or fattening ; the amount of the production ration is, however, very variable, and the maintenance ration forms a convenient basis to which the production part of the diet may be added.

Production Standards are given in the table for three different conditions : (*a*) when a cow is in calf and dry, but this standard is little used in practice, because it is most probably better management to feed a dry in-calf cow so that she is in good condition at calving, giving cake and grain for this purpose if necessary ; (*b*) for the production of 10 lb. milk of ordinary quality, and (*c*) for the production of 10 lb. milk of special richness, such as that yielded by the Jersey and Guernsey breeds. The differentiation between (*b*) and (*c*) is based on the difference in chemical composition of the respective milks ; there are excellent reasons for believing that the amount of nutrients required for the production of milk containing 14 per cent. or more of solids (including 5·0 to 5·5 per cent. of fat) is greater than the amount required for the production of the same weight of milk containing 11 to 12 per cent. of solids (including 3·0 to 3·5 per cent. of fat).

The weights of starch equivalent and digestible protein given above should be looked on, *not as final invariable standards*, but as *guides to the building up of balanced rations for milk production* ; also, they represent the findings and suggestions of careful investigators, and correspond to the composition of rations which have given excellent results in practice.

With a table of feeding standards such as that just referred to and some knowledge of the composition and properties of feeding-stuffs as the foundation of a system of feeding, information on the quantities of foods constituting the ration and on the object for which the herd is kept, the adviser is in a position to help the farmer by suggesting changes, if any are necessary, which will make the ration more suitable for milk production or which will reduce the cost of milk production.

The Food Advisory Sheet reproduced on p. 52 illustrates a ration which is unnecessarily heavy in both starch equivalent and digestible protein, and therefore more costly than is necessary; reductions are suggested which will lessen the cost and bring the ration more in conformity with the standard for Shorthorn cows averaging just over 2 gallons daily; also a variation in the quantity of cake according to the yield of milk is recommended.

PRACTICAL APPLICATION OF FEEDING ACCORDING TO YIELD.

From the point of view of the dairy farmer who is not very familiar with feeding standards, starch equivalents, etc., nor keen on arithmetical calculations as to the composition of rations, it is more convenient to know that the "maintenance" part of the cow's ration is best and usually most cheaply supplied in the form of home-grown roots and fodders—though cake or meal may be used for maintenance purposes when other foods are lacking—for example, a Shorthorn cow of 1,200 lb. (almost 11 cwt.) live weight will require for maintenance 50 lb. mangels, 10 lb. hay and 8 lb. oat straw. The "production" part of the ration is best given in the form of concentrated foods—grain, meal or cake—and the amount needed to supply the 2½ lb. starch equivalent and ½ lb. digestible protein per gallon of milk will vary from 2½ lb. to 4 lb. mixed cake, grain, etc., according to the composition of the foods used. In practice the roots and fodder allowance can be made fairly uniform for all the cows in the herd during the winter, and the concentrates varied according to the milk yield. Where roots are pulped and the fodder chaffed an allowance of 2½ to 3½ lb. suitable meals per cow may be added to the mixture, and each cow's share will be adequate for maintenance and the production of the first gallon of milk. The same or another suitable mixture of cakes, meals or grain should be given to cows yielding 2 gallons or more daily. The correct amount for each cow according to her yield may be placed on the top of the roots and chaff after these have been emptied into the manger, or it may be given separately.

The selected mixture of cake and meals for production purposes can be made up in the correct proportions weekly, fortnightly or monthly. The simplest method of feeding this mixture according to milk yield is to use a gallon or half-gallon measure, ascertain the weight of the mixture which it holds, and instruct the cowman to give each cow so many measures. The number of measures can be chalked above the feeding trough, and changes made from time to time according to the yields shown on the milk record sheet.

Specimen rations for farms with different supplies of home-grown foods are set out below; also suitable mixtures of concentrates to give a properly balanced diet for milk production.[1]

I		II		III	
	lb.		lb.		lb.
Roots	40	Hay	18	Roots	30
Hay	12	* Linseed Cake	1½	Vetch and Oat Silage	20
Straw (Oat)	10	Palm Kernel Cake	1½	Hay	5
Bean Meal	2			Straw (Oat)	5
Crushed Oats	1½			* Dec. Cotton Cake	1
				Maize Meal	1
				Bran	1

* These quantities should be given per gallon of milk yielded daily.

The feeding of concentrates should be commenced a few days after calving, provided the cow has cleansed properly and is regaining her strength and appetite. The daily allowance should be increased gradually as the milk yield increases, and, with ordinary cows, for a short time when they are giving their highest yields, it should slightly exceed the standard requirements; if no further increase in yield is obtained the allowance of concentrates should follow the milk downwards as the lactation period advances. In this way the cow is encouraged to do her best, and the amount and cost of the daily ration is kept in proportion to the milk yield. By this method also, heavy milking cows, though receiving a heavy and costly diet, produce milk at a lower cost per gallon than those receiving a lighter diet and producing less milk. The 1-gallon daily cow is the most costly producer of milk, because the cost of maintenance has to be added to the cost of 1 gallon only, whereas with the 3-gallon cow the cost of maintenance is spread over 3 gallons. The following comparative statement should help in making this important point clear on the assumption that the maintenance and production parts of the ration cost the sums stated.

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[1] Fuller information on the compounding of rations for dairy cows, and on the composition and special qualities of different foods, can be obtained in the booklet on "Feeding of Dairy Cows," issued by the National Institute for Research in Dairying, Reading.

	Daily Yield of Milk				
	1 Gall.	2 Gall.	3 Gall.	4 Gall.	5 Gall.
	pence	pence	pence	pence	pence
Cost of Maintenance Part of Ration	12	12	12	12	12
Cost of Production Part of Ration	3½	7	10½	14	17½
Total Cost of Daily Ration	15½	19	22½	26	29½
Cost of Food per Gallon of Milk	15½	9½	7½	6½	6

When considering the feeding of heavy milking cows according to yield, the question of the amount of concentrates for cows yielding 7 or 8 gallons daily naturally arises: Should they also be fed at the rate of 3 lb. to 4 lb. concentrates per gallon of milk? The answer will depend upon the individual cow's appetite and powers of digestion, and no invariable rule should be followed as to quantity. Cows of this productive capacity should be fed and cared for as individuals, and be given concentrates specially selected for their high feeding value, digestibility and attractiveness to the animal concerned.

FEEDING FOR BUTTER-MAKING.

Where the milk from a herd of cows is made into butter it is essential that the foods constituting the ration shall be such as will give butter of good flavour, texture and colour. Swedes and turnips are not as a rule advisable, because of their tendency to impart a "turnip" flavour to milk and butter; the outer partially-decayed leaves of cabbage are also objectionable, and care must be taken if silage is used. Foods which may possibly taint milk should be given after milking is finished, and all the milk removed from the cowshed. The texture of the butter is, generally speaking, soft during the summer and hard during the winter, because of the characteristic effects of the predominant foods in the diet; in summer, pasture, especially early in the season, gives a soft butter, whereas in winter, hay gives a hard butter. With these general tendencies in mind, concentrated foods can be used to counteract to some extent the seasonal effects: for example, cotton cakes, coco-nut cake and bean meal tend to harden butter, and linseed cake, soya cake and rice meal to soften it. The colour must also be considered, but in this instance it is primarily a question of preventing winter butter from becoming too white and "lardy" in appearance. Mangels, unfortunately, give a very white butter, whereas cabbage, kohl rabi, kale, and especially carrots and parsnips improve the colour; linseed cake, decorticated cotton cake and maize meal are also reported to give a deeper colour than oats and bran. Other common foods, such as dried grains, palm kernel cake and groundnut-cake have no characteristic influence.

With a knowledge of the specific effects of the chief foods on butter it is not a difficult matter to compound a suitable diet which will give a good quality product; the ration must also be properly balanced as regards starch equivalent and digestible protein for the quantity and quality of milk produced. The following rations are given as typical of what is required for a butter-making herd of Jersey cows averaging 7½ cwt. live weight and yielding 1½ gallons milk daily.

I		II	
	lb.		lb.
Mangels	28	Cabbage	20
Hay (Meadow)	14	Hay (Meadow)	12
Linseed Cake	2	Straw	5
Maize Meal	2	Dec. Cot. Cake	1
Crushed Oats	1	Crushed Oats	2
		Maize Gluten Feed	1½

Cows yielding larger amounts than 1½ gallons daily should receive additional concentrates at the rate of 3½ to 4 lb. for each additional gallon of milk.

In the preceding paragraphs dealing with the scientific feeding of dairy cows, emphasis has been laid on the necessity for feeding according to the yield and quality of the milk, and it will be obvious that feeding on such lines is impossible without milk records.

It is scarcely too much to say that milk recording is the foundation of profitable dairy farming; the records in themselves supply the information for improving a herd by selection, by breeding and by feeding, and the study of details involved in the keeping and using the records leads to a greater interest and efficiency in other sections of herd and farm management.

JAMES MACKINTOSH.

National Institute for Research in Dairying,
University College,
Reading.

The appended table gives the average amounts of starch equivalent and digestible protein in 1 lb. of the feeding-stuffs named. A summary is also given of the food requirements of cows, and an example of the method of compounding a ration for a cow of average size and yielding a given amount of milk :—

Average Composition per lb. of the Common Feeding-Stuffs.

	Starch Equiv.	Dig. Protein.		Starch Equiv.	Dig. Protein
	lb.	lb.		lb.	lb.
Hay (Meadow)	·31	·04	Dec. Groundnut Cake	·73	·41
Hay (Seeds)	·24	·04	Undec. Groundnut Cake	·57	·27
Hay (Lucerne)	·25	·07	Dec. Cotton Cake	·71	·34
Straw (Oat)	·17	·007	Egypt. Cotton Cake	·42	·16
Straw (Barley)	·19	·005	Bombay Cotton Cake	·40	·14
Vetches (green)	·08	·015	Soya Cake	·66	·34
Lucerne (green)	·09	·02	Soya Meal (extracted)	·64	·36
Pasture Grass	·11	·017	Linseed Cake	·74	·25
Silage (Vetch and Oat)	·12	·015	Coco-nut Cake	·78	·16
Mangels and Swedes	·07	·005	Palm Kernel Cake	·74	·16
Turnips	·05	·005	Palm Kernel Cake (extracted)	·74	·14
Cabbage	·08	·015	Maize Gluten Feed	·75	·18
Carrots	·09	·005	Maize Germ Meal	·85	·10
Potatoes	·18	·005	Distillers' Grains (dry)	·57	·18
Beans	·66	·19	Brewers' Grains (dry)	·48	·12
Peas	·69	·17	Brewers' Grains (wet)	·14	·037
Barley	·71	·07	Malt Culms	·43	·12
Oats	·60	·08	Maize	·82	·06
Wheat	·72	·09	Rice Meal	·72	·07
Middlings	·72	·12	Treacle	·51	—
Sharps	·64	·12			
Bran	·45	·10			
Fish Meal	·53	·46			
Dried Yeast	·67	·40			

FOOD REQUIREMENTS OF COWS IN MILK.

For Maintenance.—To keep the body in normal working order and condition :—

		Starch Equiv.		Dig. Prot.
Cows weighing 1,000 lb. (9 cwt.)	require	6 lb.	including	0·6 lb.
„ „ 1,200 lb. (10¾ cwt.)	„	7·2 „	„	0·72 „
„ „ 1,400 lb. (12½ cwt.)	„	8·4 „	„	0·84 „

For Production of Milk.—To be given in addition to Maintenance Requirements :—

	Starch Equiv.		Dig. Prot.
For 10 lb. Milk of average quality	2·5 lb.	including	0·55 lb.
„ 20 lb. „ „ „	5·0 lb.	„	1·10 lb.
„ 30 lb. „ „ „	7·5 lb.	„	1·65 lb.
„ 40 lb. „ „ „	10·0 lb.	„	2·20 lb.
„ 50 lb. „ „ „	12·5 lb.	„	2·75 lb.

Example.—What should be the composition of a ration for a Shorthorn cow of average size (10½–11 cwt.) yielding 30 lb. milk daily ?

REQUIREMENTS :—

	Starch Equiv.		Dig. Prot.
For Maintenance (1,200 lb.)	7·2 lb.	including	0·72 lb.
For Production (30 lb. milk)	7·5 lb.	,,	1·65 lb.
Total . .	14·7 lb.	including	2·37 lb.

RATION :—

	lb.	Starch Equiv. lb.		Dig. Prot. lb.
For Maintenance :				
Roots	60 ..	4·20	including	0·30
Hay (meadow)	10 ..	3·10	,,	0·40
Straw (oat)	7 ..	1·19	,,	0·05
		8·49	including	0·75
For Production :				
Palm Kernel Cake	3 ..	2·22	including	0·48
Undec. Earthnut Cake . . .	3 ..	1·71	,,	0·81
Maize Germ Meal	3 ..	2·55	,,	0·30
		6·48	including	1·59
Total . .		14·97	including	2·34

MILK: ITS QUALITY AND ADULTERATION.

SINCE the Sale of Milk Regulations of 1901 fixed for certain purposes " presumptive " limits for fat and solids not fat in genuine milk, much has been urged against them. It has been asserted by some that the figure suggested as the minimum fat content of genuine milk is impossibly high, and many are of opinion that the figure is unduly harsh. Of course both the farmer and dairyman exist who would like fresh regulations enacted prescribing a higher minimum fat limit, but these are in a small minority.

Whenever the Sale of Milk Regulations are adversely criticised it is well to bear in mind that the quality of milk is sometimes of great importance to the community, and that a purchaser has, therefore, some right to expect milk to conform to a certain quality. Its peculiar importance lies perhaps in that milk may be the sole food of the young, or the only food permitted in the case of illness ; under certain circumstances only the smallest quantity of milk may be allowed to be administered consistent with the continued existence of life. Under these conditions the quality of milk is of great consequence, and certainly the consumer should be correct in assuming that milk as ordinarily purchased is of a certain quality. The farmer's plea is often that milk as drawn from the cow must be genuine milk and that this quality is all a purchaser should reasonably demand.

It has been advanced that no kind of standard should be necessary in the case of milk because the discrimination of the purchaser would lead ultimately to the survival of firms selling the best quality milk only. Further, that competition amongst purveyors would lead to a better quality milk supply. Unfortunately these arguments are more or less fallacious, because it can readily be shown that many purveyors of highly adulterated milk flourished prior to the passing of the early Food and Drugs Adulteration Acts. Without supervision of the milk supply the purveyor of adulterated milk would be able to sell the commodity at a lower price than his honest competitors, with the inevitable result that the latter would almost be forced to adulterate his supplies in order to live. Actually this state of affairs once existed.

Whether marketable milk should always contain the percentages of fat and solids not fat set out in the Sale of Milk Regulations is a debatable question, but the Regulations themselves do not suggest a standard that genuine milk must always conform to. The purport of the Regulations is to establish the smallest amounts of fat and solids not fat that a genuine milk should be expected to contain, and if milk is found on analysis to be of poorer quality, then it may be presumed that the poorness is due to adulteration. But though a milk may be presumed to be adulterated owing to its poor quality, the Sale of Milk Regulations further enact that its genuine character may be established by such proof as will conclusively show that the milk was in the same condition as when it left the cow. Widely divergent opinions exist as to what evidence should be sufficient to prove the genuineness of poor milk, and no intimation was given on this point at the time the Regulations were made.

The "limits" stated in the Sale of Milk Regulations are in no sense standards, and it is not to be imagined that legislators ever intended them to be so considered. The report in 1901 of the Departmental Committee appointed by the Board of Agriculture to enquire into the desirability of making Regulations with respect to milk and cream, leaves no doubt about their opinion of a "standard." The report contains this paragraph: "The Regulations . . . are in effect to prescribe the point at which it may be reasonably presumed, in the absence of proof to the contrary, that milk is adulterated. The point, in whatever terms it may be expressed, must clearly be not a 'standard' in the strict sense of the term, but a minimal limit." The view of this Committee was that some kind of statutory limit for milk was necessary, but that this limit should not be one for a milk purveyor to aim at supplying, but merely one below which genuine milk should not ordinarily fall.

Subsequent to the passing of the Regulations a letter was sent in 1911, on behalf of the Secretary of State, to Clerks to Justices fully explaining the view held at the Home Office, and this letter contains the following passage: "Under the Regulations a presumption of adulteration or abstraction is raised by a deficiency of milk fat or other solids. But if it can be proved that the milk was sold as it came from the cow, the presumption is rebutted. It should therefore be observed that the sale of milk containing less than 3 per cent. of milk fat or less than 8·5 per cent. of other milk solids does not necessarily constitute an offence; the proof of the deficiency throws on the defendant the onus of showing by direct and positive evidence that the milk was sold as it came from the cow."

Originally the law seems to have shown every consideration to the consumer, whereas now the quality of milk is of small consequence as long as it is the genuine product of the cow. The condition of the cow and the quantity and quality of its food, are of no consequence : even the sale of fore milk as milk, and with no addition or subtraction, has been held to be no offence. It therefore follows that if milk can conclusively be shown to have been sold exactly in the same state as it was yielded by the cow, no offence has been committed, despite the poor quality of the milk. The genuine nature of milk may be established in a Court of Justice by the evidence of every person who handled the milk, but in this case the milk must have been under supervision from the time it left the cow until it reached the purchaser. Briefly then, so far as the Sale of Milk Regulations are concerned, milk may only be presumed to be adulterated until its poor quality is proved to be due to the cow.

It was the opinion of several witnesses examined by the Departmental Committee appointed by the Board of Agriculture in 1900 that an absolute standard should be fixed for milk, and a given time allowed a farmer to overhaul his herd so that the quality of his milk would comply with the standard. This was an alternative put forward to a "limit" which would constitute genuine milk. A fixed standard has since been suggested on different occasions, a standard which must be complied with or a penalty incurred. If the quality of milk yielded by a cow never varied perhaps there would be little argument against a fixed standard, but unfortunately the milk of any cow, or even that of a herd, may be found on occasions to show extraordinary fluctuations so that extremely poor milk may temporarily be yielded. It can scarcely be seriously suggested that because a cow has been known to yield milk of an inferior quality that she is only fit for the butcher. On the other hand the existence of cows which invariably yield milk of bad quality is well known, and there is some justification for complaint if such milk is habitually sold unmixed with milk of a better quality. Though the weeding out of such cows is not compulsory, it would appear to be somewhat unwise of farmers to remain indifferent to the quality of their milk supply at a time when other milk products are successfully competing with the sale of new milk.

The causes of the variation in the quality of milk given by a cow are numerous, but there are three which appear to be of great importance—those relating to the interval between consecutive milkings, those relating to inherited functions, and a seasonal variation. The effect on the quality of milking at very unequal periods is well known, and briefly, the longer the period allowed to elapse between milkings the poorer in fat is the milk yielded at the termination of the longer period. As the longer interval usually occurs between evening and morning milkings, the morning milk is invariably of the poorer quality. Usually the exigencies of the railway service and the requirements of customers, as well as the convenience of farm labour, has to be considered, and the times of milking are regulated thereby. Therefore the times of milking are almost unalterable. The inherited function of a cow to produce milk of low quality is more prevalent in some breeds than others, and is strongly marked in the case of some individual cows.

On tabulating the morning samples of milk obtained from the individual cows of 12 herds tested at intervals of about 6 weeks during the last 2 years and comprising about 2,000 samples, the following percentage numbers were found to contain less than 3 per cent. of fat.

TABLE I.

Herd.	1	2	3	4	5	6	7	8	9	10	11	12
Percentage of A.M. samples from individual cow containing less than 3 per cent. fat . .	27·1	52·4	27·4	26·2	28·2	0	0	19·0	0	1·3	25·0	44·4

Herds 6, 7, 9 and 12 were only small herds. The results obtained show that no less than 26·4 per cent. of the total samples

TABLE II.

Showing the Average Quality of the Milk yielded by Various Herds and tested periodically during a year.

	Jan.	Feb.	March.	April.		May.		June.		July.	Aug.		Sept.	Oct.		Nov.	Dec.	
HERD.	A.M.	A.M.	A.M.	A.M.		A.M.		A.M.		A.M.	A.M.		A.M.	A.M.		A.M.	A.M.	
10 (24 cows) .	5·1					4·7		4·8			4·2			5·1		5·1	5·3	
1 (19 cows) .		3·05	3·1			3·05		3·3		3·5	3·4			3·5			3·7	
2 (17 cows) .	3·1	3·25		2·95		2·9		2·9			2·95			3·1			3·25	
3 (30 cows) .	3·0		3·35	3·25		3·1		3·3		3·35			3·1			3·7	3·5	
4 (50 cows) .	3·2	3·3	3·4			3·2		3·5			3·3			3·45		3·4		
HERD.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.
10 (24 cows) .	6·7					5·55		5·7			5·6			5·8		6·05	6·7	
1 (19 cows) .		3·9	4·0			4·3		4·3		4·6	4·4			4·8			4·2	
2 (17 cows) .	3·5	3·4		3·1	4·7	2·95	4·25	2·95	4·25		3·05	4·1		3·6	4·3		3·2	3·9
3 (30 cows) .	3·8		4·2	4·25		4·1		4·1		4·1			3·85	4·3		4·3	3·9	
4 (50 cows) .	4·1	4·1	3·95			4·2		4·2			4·1			4·4		4·6		

of morning milk examined contained less than 3 per cent. of fat. The quality of the mixed milk from the herds each morning was, however, another matter, and it only ever fell slightly below the 3 per cent. limit. The quality of the milk from some of these herds is given in Table II, page 64.

From Table II it is apparent that cows exist in herd No. 2 which habitually yield milk of extremely poor quality, and the milk from these cows reduces the quality of the herd's milk so much that the fat in the morning's milk invariably hovers round the 3 per cent. limit. This herd No. 2 contains at least five cows which only rarely yield milk in the morning which contains 3 per cent. of fat, and a summary of the tests made on morning milks from these cows during a period extending either over 1 or 2 years is here given :—

TABLE III.

Herd No. 2.	Period of Tests.	Lowest amount of fat found in morning milk.	Highest amount of fat found in morning milk.	Usual amount of fat found in morning milk.
Cow A	2 years	1·7	3·0	2·3 %
„ B	1 year	2·1	3·0	2·6 %
„ C	1 „	2·5	4·3	2·9 %
„ D	1 „	2·3	3·1	2·6 %
„ E	2 years	2·0	2·8	2·4 %

These results clearly show the influence of cows that invariably yield milk of inferior quality and, further, that the milk from a comparatively small herd may be largely influenced by them.

The " solids not fat " content of milk does not fluctuate in a manner similar to the fat. For instance, the difference in solids not fat in the morning and evening milk from a cow is usually only small, despite unequal periods of milking. It is comparatively rare to find the solids not fat in the mixed milk from a herd to fall materially below the minimal limit of 8·5 contained in the Sale of Milk Regulations, though such cases do occur from time to time. The variations in the amounts of solids not fat would appear to be largely seasonal, low percentages more frequently occurring during a dry summer or early autumn. This variation is well shown by the average solids not fat obtained in milk samples submitted under the Food and Drugs Act in the County of Kent and comprising both morning and evening milkings :—

TABLE IV

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1917 . .	8·78	8·77	8·59	8·45	8·61	8·54	8·54	8·54	8·60	8·63	8·66	8·48
1918 . .	8·47	8·49	8·57	8·70	8·69	8·77	8·61	8·61	8·63	8·68	8·63	8·62
1919 . .	8·67	8·66	8·62	8·86	8·63	8·59	8·67	8·58	8·61	8·81	8·82	8·66
1920 . .	8·70	8·75	8·80	8·81	8·78	8·74	8·63	8·67	8·67	8·71	8·75	8·78
1921 . .	8·71	8·74	8·80	8·72	8·79	8·65	8·45	8·50	8·62	8·75	8·76	8·78
							(Very		dry	summer)		
1922 . .	8·73	8·72	8·77	8·90	8·71	8·68	8·58	8·69	8·73			
Average monthly solids not fat . .	8·77	8·69	8·69	8·74	8·70	8·66	8·58	8·59	8·64	8·71	8·72	8·66

The above results are in each case the mean result of the examination of about 90 samples of milk every month. It will be seen that the solids not fat tend to decrease during the month of June, becoming lower throughout the months of July and August, and increasing again during the month of September. The effect of prolonged hot dry weather is noticeable during the months of July and August, 1921, when the milk of many herds was found to contain less than the limit contained in the Sale of Milk Regulations. During December, 1917, and January and February, 1918, there was a continuous depression in the amount of solids not fat contained in milk, and this decrease I can only attribute to the feeding of the cows. Throughout the winter of 1917–1918 there was a great scarcity of all feeding cakes, with the result that only a minimum amount could be fed, and to this substitution of inferior feeding stuffs during the winter months must be attributed the curious decrease in non-fatty solids found.

Though it cannot be stated as a rule, it is generally a fact that the solids not fat in the milk yielded by an individual cow is more or less constant. At all events this appears to apply to cows kept under ordinary conditions at the farm. As some cows seem to yield milk consistently poor in fat, so other cows yield milk exceedingly poor in solids not fat. The results obtained in the case of one cow, for instance, shows that she gave milk containing only about 6·5 to 7·1 per cent. of solids not fat throughout a year, and further, this milk was continuously deficient in proteins. In another instance a cow's milk only showed from 7·3 to 8·0 per cent. of solids not fat during a year. Cases such as these cannot be said to be very common, but they prove the existence of cows which habitually give milk which fails to reach the 8·5 per cent. limit. The latter limit, however, is usually easily attained by even small herds, and the limit, used with a knowledge of the composition of pure milk at the time, usually gives safe indications of added water where the milk of a herd is concerned.

The seasonal variations in the fat content of milk is marked and of importance because it has been found that during certain months of the year the milk of a herd is more apt to fall below 3 per cent. Usually during March the fat content of milk commences to drop and this fall continues until a minimum figure is reached about the month of June. An increase then begins, and the highest fat percentages are to be found during the months of October, November, December, January, and February. This seasonal variation is well shown by the average monthly fat figures obtained in the Kent County Laboratories during the last eight years, and these figures are given under :—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
3·97	3·92	3·80	3·86	4·72	3·68	3·88	3·87	3·85	4·01	4·08	3·99

Obviously as morning milk is invariably of lower quality than the evening's, the morning's milk during the spring months will more often be found to border on the minimal limit. The low quality of spring milk is often caused by the young grass on pastures, and the condition may be sometimes rectified by feeding a small quantity of a more binding food, such as cotton-cake.

Normally the milk of a cow is not influenced by the food fed to the animal to the extent that is often supposed. This applies to the fat content of milk as well as to the total solids. So long as a cow receives sufficient food of a properly balanced character the quality of the milk yielded is usually difficult to alter to any considerable extent by means of any alteration in its food, but there is evidence that the quality of milk may be adversely affected by overfeeding, especially where concentrated foods are concerned. Unquestionably drastic changes in diet may influence the quality of milk, and the food of cows should be altered slowly whenever possible.

Amongst the many causes affecting the quality of milk may be mentioned the period of lactation, climatic variations, change of milkers, excitement, or shock of almost any kind, and the nature of the soil.

The differing quality of milk yielded by a cow during her period of lactation is involved with other causes affecting the quality. It has been alleged that a longer period elapses in the case of a newly-calved Friesian cow before its milk regains the normal quality for the particular cow. On looking at a number of results obtained on the milk of recently-calved Friesians, there would appear to be no general justification for this allegation. A newly-calved cow of any breed is apt to give milk of poorer quality than it gives during a more advanced period of lactation. Sudden spells of cold weather or excessive wet may cause a lowering of the amount of fat in milk, but generally hot, sunny weather results in a higher fat yield. Possibly the question of the influence of the soil is largely due to the natural herbage that the soil supports, though the moisture-containing capacity of land may not be without effect.

Other causes alleged to influence the milk fat yield are numerous. Recently it was contended that some very poor quality milk was due to the fact that the cows had been subcutaneously injected with tuberculin a short time previously. To obtain information in this connection the milk from each of 19 cows previously untested with tuberculin was sampled and the cows were again sampled 48 hours after injection. Of the 19 cows 11 were found to react and 8 were non-reactors. The results obtained on the analyses of these milks were as follows :—

	Mean fat content.	
	Before injection.	48 hrs. after injection.
Morning milk obtained from 11 reacting cows	3·4 %	3·7 %
Morning milk obtained from 8 non-reactors .	3·4 %	3·3 %

These results indicate that 48 hours after injection reacting cows yield milk containing a somewhat increased quantity of fat, but that the fat content of non-reactors is not affected. In precisely the same way a higher fat percentage was found in the evening's milk after injection in the case of the reactors, the non-reactors remaining of the same quality. There is some evidence, however, that during the 24 hours following tuberculin injection the milk from reactors does contain somewhat less fat, but again the non-reactors show no diminution in quality, and the total effect of the injection would therefore be very unlikely to cause the milk from a herd to fall lower than the minimal limit of 3 per cent. It has been found that reactors yield somewhat less milk during the 24 hours following injection. The solids not fat did not appear to be altered in any way by the injection, the percentage composition of every cow's milk remained almost constant, that is to say, a cow giving a high solids not fat continued to give milk containing a high solids not fat without alteration. The percentage composition of the solids not fat was determined in a number of these milks, but no change in the quantity of any constituent was observed.

Too often milk in a churn is regarded as consisting of milk from a herd of cows. Rarely, however, is the total milk of a herd mixed, and each churn, therefore, only represents the milk of a few cows. There always exists the possibility of all the milk from the few cows yielding poor quality milk finding its way into one churn. This possibility is of importance, and complaints concerning quality would sometimes be obviated if more care were taken in the mixing of milk from various cows.

A vast amount has been written of recent years concerning the hygienic standards that milk should comply with. There can be no question that the greatest care should be taken to exclude any kind of pollution during milking operations, also in the dairy and in the subsequent transit of the milk to the consumer. Though the production of sterile and dirt-free milk is not at present a commercial possibility, still every effort should be used to market milk in the cleanest condition only. Unfortunately too often little or no attention is paid to the storage of milk by the purchaser after delivery and prior to its consumption. But though it cannot be doubted that disease has often followed infection by polluted milk, any legislation to effect an improved supply should be enacted cautiously, so that the price and quantity of milk is not affected. In the past, dire consequences have followed when inability to purchase has resulted in insufficient milk being given to children. Purchasers of Grade A milk are now assured that all such milk is produced under clean conditions, and that the farms producing this milk do send out milk conforming with certain bacteriological standards; no guarantee of nutritive quality is, however, implied.

Whilst there is little evidence to show that any large proportion of the public would be willing to purchase high quality milk at a slightly increased price, it seems desirable that a specific name should be legalised for milk guaranteed to contain say a minimum of 3·5 per cent. of fat. It is an anomaly that milk from a Jersey herd and that from a poor Friesian herd, for instance, should command the same market price.

The Milk and Dairies (Amendment) Act, 1922, renders the addition of water, or skimmed milk, to milk intended for sale an offence. This provision should have the effect of checking the "toning" of milk in the future, though the practice is often difficult to prove. The "toning" of milk usually consists of adding skimmed milk to ordinary quality milk until the fat content is reduced to about the legal limit. This reduction has been practised for a long time at some dairies, with the result that the milk sold by these dairies was always found to contain about 3 per cent. of fat and no more. The above provision of the Milk and Dairies Act may now be enforced in these cases when sufficient evidence is obtainable. This provision continues the requirements contained in an old Food Control Order, and it will at least stop the sale of mixtures of milk and water offered as such. Purveyors of milk did exist who sold nothing but milk and water, and no offence was committed so long as the presence of the water was declared. The addition of water was invariably only declared in the presence of an Inspector.

The percentage number of samples of milk examined annually by Public Analysts in England and Wales and found to be adulterated appears to be slowly decreasing during recent years. Whether this diminution will be maintained is uncertain because low periods of milk adulteration have been noted before. About 10 per cent. of the milk samples submitted to Public Analysts are returned by them as adulterated, and the term adulterated is here used to indicate milk samples either containing less than the minimal limit set out in the Sale of Milk Regulations or containing preservatives, &c. During the last two years the percentage number of milk samples returned as adulterated has certainly decreased, and these figures are compared below with others obtained in former years with intervals of about 10 years.

TABLE V.

Year.	Total milk samples examined. England and Wales.	Number adulterated.	Percentage adulterated.
1898 . . .	20,315	2,011	9·9
1899 . . .	21,964	2,314	10·5
1910 . . .	47,895	5,332	11·1
1911 . . .	50,849	6,066	11·9
1920 . . .	62,463	5,797	9·3
1921 . . .	61,439	5,290	8·6

The percentage rate of milk adulteration recorded for the country generally is materially higher than it would otherwise be on account of a few counties and boroughs where milk adulteration would appear to be extensively practised. In several instances the percentage of milk samples returned as adulterated exceeds 25 per cent., and this figure is greatly exceeded in some cases. The general reason for the high rates of adulteration found in these counties and towns lies in the fact that little attention is often given to the milk supply and the number of milk samples taken annually is insufficient to deter adulteration. In some instances the returns made by Public Analysts of the milk samples found to be adulterated do not represent the actual amounts of adulteration taking place in their districts, owing to suspected vendors *only* being sampled formally by the Food and Drug Inspectors. Then, too, systems of informal sampling may make milk adulteration appear unduly high because the milk of a dishonest vendor may be sampled several times before a final formal sample is taken. In this case the number of samples found to be adulterated may appear to be large, whereas several of them concern one vendor only.

From the returns prepared by the Ministry of Health it is evident that the larger proportion of adulterated milks are certified to contain added water. In London during 1921, for instance, out of 678 adulterated samples, 357 contained extraneous water, 250 were deficient in fat, 33 were deficient in fat and also contained added water, 10 contained a preservative, and 28 were artificially coloured.

There certainly appears to be less milk adulteration in the county of Kent than formerly, and this is well shown by the percentage of milk samples certified to be adulterated having gradually fallen from 7·5 per cent. in 1917 to 3·0 per cent. during 1921. Of the 263 milk samples found to be adulterated during the last five years, 121 contained added water, 131 were deficient in fat, 5 contained preservatives, and 6 contained added colouring matter. The largest amount of added water found in any of these milks was 63·0 per cent., but about 50 per cent. was certified on several occasions. No fewer than 36 samples contained upwards of 20 per cent. of added water, and 32 were deficient in fat to the extent of at least 20 per cent. From these figures it may be inferred that milk adulteration is by no means a trivial matter.

Before a war-time Food Control Order rendered the addition of colouring matter to milk an offence, practically all the milk sold in most localities was coloured artificially. No doubt long practice of this addition had resulted in the consumer acquiring the belief that only highly coloured milk was genuine, and from the absence of colour poorness or adulteration was inferred. Now that the consumer has become used to the purchase of milk in its uncoloured state it is well that the Milk and Dairies (Amendment) Act, 1922, has permanently prohibited the addition of any colouring matter to milk. The purchase of colouring matter, either by the farmer or dairyman, was an unnecessary expense, and no useful purpose was served by it. There is no question that in some cases colouring matter was added to milk to mask adulteration, and milk of poor quality was rendered more difficult of detection by the ordinary purchaser. Experience showed that highly diluted milks were always highly coloured. In fact, the only purpose the addition of colouring matter to milk served was to make any milk appear fictitiously rich.

Milk containing chemical preservatives is now only rarely encountered. The Public Health (Milk and Cream) Regulations, 1912, prohibited the addition of any preservative substance to milk intended for sale, and the provisions of the Order are invariably complied with in this respect. When a preservative is found in milk it is generally discovered that the addition was made in ignorance, and occasionally as the result of reading popular articles on the uses of preservatives. Only a few years ago a very large proportion of milk sold contained either boric acid or formalin, these substances constituting the most popular preservatives. The sale of "reconstituted" milk, that is, milk made by the dilution of any form of condensed milk, is now an offence.

From the foregoing remarks it is obvious that the only common form of milk adulteration now practised is that of adding water or skimmed milk to milk, and it is satisfactory to note that even this form of adulteration appears to be diminishing permanently.

Whether the 3 per cent. minimal limit for the fat content of milk should be regarded as a fixed standard, and whether milk found to contain less than 3 per cent. of fat should render the vendor liable to prosecution without other evidence, are debatable questions. I am of opinion that the present limit of 3 per cent. should not be lowered, not only having regard to the legitimate interests of the public, but also because a lowering of the limit would admit of the unquestioned sale of very poor quality milk. This would tend further to induce farmers to concern themselves with the breeding of cows solely with regard to the quantity of milk they could produce, and therefore in course of time a still further lowering of a legal limit would probably become necessary. In his own interest a farmer should adopt a system of milk-recording so that he is enabled to say authoritatively which cows pay to keep, and a system of analysis, so that he will be enabled in course of time to eliminate the cows yielding milk of a very inferior quality. Farmers taking advantage of the existing facilities to have milk analysed at a nominal fee would not incur undue expenditure and they would have the satisfaction of possessing exact information concerning the quality of each cow's milk. The quality of milk supplied to milk vendors is now of additional importance, because the continued sale of milk below the recognized standard may result in the Local Authority refusing to register the vendor and thus prohibit him from carrying on the trade of a dairyman (Milk & Dairies (Amendment) Act, 1922).

At the moment it does not appear possible to suggest any method of obviating police-court proceedings where the sale of milk is concerned which is proved to be of adulterated quality, but which may not have involved fraudulent admixture. Every Local Authority should, however, if possible, resort to the "appeal to the cow" whenever the quality of a farmer's milk is adversely reported upon, so that some information may be placed before the Authority respecting the quality of the milk the herd is producing.

F. W. F. ARNAUD.

Maidstone, Kent.

THE UTILISATION OF WHEY

I. Introduction.

In the process of cheese-making, when the solid curd is separated from the milk, it leaves behind whey, a watery liquid which occupies from two-thirds to three-quarters the volume of the original milk. Of the constituents of the milk, practically all the casein and most of the fat are removed in the curd. Milk sugar (or lactose), lact-albumin and small quantities of fat and of various salts are left in the whey. Whey has therefore a certain feeding value, but, since it contains about 93 per cent. of water, it is very dilute.

As long as cheese was made on the small scale in farm-houses, the whey could be used easily and profitably as a food for pigs. But, with the development of the liquid milk trade, a new problem has arisen. During the spring and summer of a normal year, the supply of milk largely exceeds the demand, and most of the milk depots have been accustomed to make the excess into cheese. In a large factory the whey thus obtained as a by-product may amount to several thousand gallons a day. It is impossible, or at all events undesirable, to collect enough pigs round the factory to consume the whey, while, owing to its bulk, it does not pay to transport the whey to the pigs. At the best, much of it is wasted, and at the worst, owing to the fact that it easily putrefies, the whey injures rivers or destroys the filter beds of sewage works. Cheese factories are thus getting into trouble with local authorities, and there is danger that some of them may be closed, to the great detriment of the milk trade. It has been estimated that, of the hundred million gallons of whey produced in Great Britain in a normal year, some forty million gallons are wasted. The value of the lactose and lact-albumin contained in this volume is about £1,000,000. If half these substances could be extracted, the total national turnover would be increased by something approaching £500,000 a year, while any net profit should benefit the dairying industry by increasing the value of milk.

Milk sugar (or lactose) can only be obtained from milk or whey; it cannot be made synthetically. In its refined form, it is chiefly used in the preparation of various forms of children's food, and as a substance which, when added to cows' milk, makes it nearer in composition to human milk and more digestible by infants. Small quantities are also used in pharmaceutical prescriptions and in biochemical laboratories. Crude lactose is used in certain brewing products and in some chemical foods. Several hundred tons a year of refined lactose and large quantities of the crude product are consumed in this country. At present all our supplies come from abroad, chiefly from Holland and America: no lactose is extracted in England. The description of methods given in the text-books and other literature on the subject seems to be incomplete, and, we were told, it is not possible to gain admission to the foreign factories. If this new industry were to be established in England, therefore, experiments were needed.

For these reasons, on the formation of the Research Committee of the Royal Agricultural Society in the spring of 1922, the Committee undertook, at the instance of Lord Bledisloe, to examine the problem of the utilisation of whey.

Three other investigations on the subject were already in progress: (1) The Ministry of Agriculture for the past two or three years has been carrying on extensive investigations in its experimental lactose factory at Haslington, near Crewe; (2) The present writer, in 1920, had employed a chemist to carry out, at Cambridge, laboratory experiments on the extraction of lactose, and in 1921, before hearing of the venture at Haslington, had equipped an experimental lactose plant in connection with a small cheese factory at Hilfield, in Dorsetshire; (3) Captain Golding was experimenting at the National Dairy Institute at Reading on methods of drying whey as food for animals.

By general consent it was agreed to carry on all these investigations in touch with each other, and to communicate mutually all information and results. The present writer placed his experimental factory at the disposal of the Royal Agricultural Society for the cheese season of 1922, and undertook to supervise experiments there and at Cambridge on their behalf. It was also agreed that the problems specially to be attacked by the Society should be—

(1) The best method of separating the lact-albumin, if possible in a soluble form;

(2) The extraction of the lactose from the whey after separation of the albumin;

(3) The possibility of using dried whey as a concentrated raw material for the manufacture of lactose.

The Ministry's experiments are being continued, and Captain Golding has carried further his work on other methods of drying whey.

(1) *The extraction of soluble lact-albumin.*

In the usual method of making lactose, as practised in the foreign factories, the whey has its acidity adjusted to a standard value and is then heated to 85° or 90°C. Much of the albumin is thus coagulated, and can be separated in a filter-press. It is an insoluble white substance, which, in composition, resembles white of egg after boiling. And at first sight it seems as impossible to get it back into a soluble form as it would be to unboil an egg. Nevertheless, Professor F. Gowland Hopkins, the distinguished discoverer of vitamins, undertook to supervise experiments to be made by one of the students in his laboratory at Cambridge with the object of either finding some new method of separation which gave the albumin itself in a soluble form, or of discovering some treatment of the coagulated substance which would make it, or one of its derivatives equally valuable for food, soluble in water.

It was known that coagulated albumin could be dissolved in strong acids or alkalies to form compounds known as acid or alkaline "albuminates," and, although attempts to separate a soluble albumin itself failed, Mr. C. P. Stewart, by the method described in his paper which follows, has succeeded in so reducing the amount of acid or alkali in the "albuminate" that it is quite harmless. The product should be as useful in the preparation of foods as a soluble albumin would be, but its production on the large scale has not yet been studied. Another method of separating albumin without heat coagulation discovered by Mr. L. Harding is described below.

(2) *The clarification of fresh whey and the extraction of lactose therefrom.*

To carry out these and other experiments, the Society, on the recommendation of Professor Sir William Pope, engaged Mr. Leonard Harding, of Gonville and Caius College, Cambridge, for the six months April to September, 1922. For two months or more, Mr. Harding carried out an investigation in Professor Pope's laboratory at Cambridge, and then proceeded to verify his results on the large scale at the experimental factory in Dorsetshire, and to make further discoveries.

His paper, given below, describes his work. He has arrived at a method for extracting lactose, which, in certain respects, seems to have advantages over former methods as described in the literature. In particular, his process of clarification by chalk and aluminium sulphate appears to be especially useful in removing the residual proteins which remain after the first coagulation. White lactose of a high percentage purity has been produced by this method in the Hilfield factory.

(3) *Dried whey as a raw material for the manufacture of lactose.*

No one cheese factory can supply enough whey to make the extraction of lactose a very profitable operation, and lactose apparatus is too complicated and costly for an ordinary cheese factory to install. Hence it seemed desirable to find some method of drying and storing whey, in order that the excessive costs of transport might be reduced.

Several cheese factories are already equipped with the plant for drying whey over rollers heated by steam, and it was thought possible that this dry substance might solve the problem. But in Mr. Harding's experiments a very poor yield of lactose was obtained from it.

He has discovered, however, that by adjusting the acidity of the whey and evaporating it *in vacuo*, a dry substance is obtained which is readily dispersible in water. The factory apparatus at Hilfield was found not to be suitable for the production of this substance on the large scale, but it sufficed to show the conditions necessary for its manufacture.

Thus on the three problems of which the investigation was undertaken by the Research Committee, much light has been thrown by six months' work in the laboratories of Cambridge and the experimental factory at Hilfield, and the extraction of lactose has been carried out on the small factory scale.

Towards the end of his work at Hilfield, Mr. Harding found evidence which pointed to the possibility that the best method of solving the transport problem—indeed of the whey problem generally—might well be sought in the evaporation of whey in vacuum pans to a syrup, and not to dryness. From this concentrated liquid, lactose and lact-albumin were prepared satisfactorily, and indications were obtained that it might be possible to separate them from the liquid and from each other by purely mechanical means. The apparatus at Hilfield was not designed for this purpose, and other investigations were needed. But enough lact-albumin was obtained to show that it possessed remarkable properties. As it had never been heated above 50° or 60°C. it was not coagulated like lact-albumin obtained from whey by the usual methods. Sir Richard Threlfall kindly arranged for its examination in the laboratory of Messrs. Albright & Wilson, and it proved to be more soluble than coagulated albumin, and to consist of particles intermediate in size between those of the albumin in fresh whey and of the coagulated substance.

It was then arranged that further experiments should be made during October with a special new type of centrifugal machine known as the Gee hydro-extractor at the works of the manufacturers in London, and, as Mr. Harding will explain, these experiments have been successful in separating the lactose and the lact-albumin. The bio-chemical properties of this lact-albumin will be examined by Professor Hopkins, who is also investigating the value of the concentrated whey itself as a food.

These experiments, following and completing as they will do the work carried out on behalf of the Society, when correlated with the large scale investigations of the Ministry at Haslington and with the work of Captain Golding at Reading, give such an amount of information about the extraction of lactose and other methods of utilising whey, that the subject now seems ripe for industrial development. Certain points of the work now described have been protected by patents by the Royal Agricultural Society. Licences to work them will be granted to those who put forward a scheme approved by the Society.

C. DAMPIER WHETHAM.

Upwater Lodge,
Cambridge.

II. A SOLUBLE LACT-ALBUMIN FROM WHEY.

In the following experiments lact-albumin was separated from fresh whey by heating the liquid. Attempts to obtain a true reversible heat-coagulation failed. The hydrogen-ion concentration of the whey was adjusted to various values ranging from $P_H = 3{\cdot}5$ to 8, but in each case, on slowly heating, the liquid became opalescent at 70°C. and flocculated rapidly at 84°C., the coagulum being insoluble in water.

It is an old-established fact that coagulated albumin dissolves in alkali to form an "alkali-albuminate," or in acid to form an "acid-albuminate," compounds readily soluble in presence of traces of alkali or acid, respectively. An attempt was therefore made to produce a soluble compound on this basis.

To coagulate the lact-albumin, the whey was heated to 95°C. At this temperature practically all the albumin was at once thrown down. (On boiling the clear filtrate no further precipitation took place.) At lower temperatures, however, coagulation was slow. Thus after heating to 84°C. for half an hour, precipitation was still incomplete. The coagulum was filtered off and was not washed. The average yield (dried *in vacuo* over sulphuric acid) from 100 c.c. whey was 0·45 gms., but on the large scale this would undoubtedly be exceeded.

In the first series of experiments, the moist coagulum[1] from the filter was ground to a smooth paste with a measured amount of a tenth normal solution of sodium hydroxide—N/10 NaOH;

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[1] The coagulum should not be dried.

the paste was allowed to stand in a warm place (ca. 35°C.) for half an hour, and was then dried *in vacuo* over sulphuric acid. The results are shown in tabular form below.

Per cent. NaOH in dried products.

Per cent.		
·88 . . .	White product:	insoluble.
1·9 . . .	Do.:	almost insoluble.
2·7 . . .	Do.:	partially soluble.
3·9 . . .	Do.:	partially soluble in cold. Easily soluble by heating on water bath.
5·0 . . .	Do.:	Easily soluble; 0·4 g. dissolved readily in 15 c.c. cold distilled water.

It was considered possible that a soluble product might be obtained by dissolving the coagulum in the minimum of dilute NaOH, and rapidly evaporating the solution by some such means as spray drying. Experiments showed, however, that it was difficult to dissolve the coagulum in less than 5 per cent. of its own weight of soda. The very dilute NaOH solution which it was necessary to employ rendered the reaction between the alkali and the albumin exceedingly slow. The method therefore did not appear feasible.

Alkali albuminate is precipitated from its solution by acid, and the precipitate, though insoluble in water, dissolves in an exceedingly weak solution of alkali. The coagulated lact-albumin was therefore dissolved in excess of alkali—1·6 g. dissolved in 20 c.c. N/5 NaOH on standing for a few minutes—and reprecipitated by the addition of HCl. Caution was necessary in this operation, as the precipitate redissolves in excess of acid, forming the acid-albuminate. The precipitate was filtered off and thoroughly washed to remove NaCl. It was then ground to a paste with NaOH and dried as in the first series of experiments. A product containing 2 per cent. NaOH was easily soluble in water. This substance, of course, is not lact-albumin itself, but the meta-protein, which, however, has the same nutritive value as the original protein.

C. P. STEWART.

III. THE EXTRACTION OF LACTOSE AND LACT-ALBUMIN FROM FRESH AND FROM CONDENSED WHEY.

It will be seen from Table I that the valuable solids in whey consist of fat, protein and milk sugar (lactose). As the fat is easily removed by a whey separator and can be profitably made into butter, the writer's investigation is confined to the utilisation of whey after the removal of the fat. An examination of Table I indicates at once that the greatest economic factor in the problem is the removal of 93 per cent. of water.

TABLE I.—*Composition of Whey.*

According to	Water	Fat	Milk Sugar	Protein	Ash
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Fleishmann	93·15	0·35	4·9	1·0	0·6
Konig	93·38	0·32	4·79	0·86	0·65
Smetham	93·33	0·24	5·06	0·88	0·49
Vieth (skimmed milk) .	93·0	0·09	5·45	0·92	0·54

It is this large bulk of water which so vitally affects the problem as a whole, for, apart from the cost of its removal in the separation of the solid matter, the transport of such a volume cannot be contemplated. In addition, it is essential that whey should be dealt with whilst still fresh, as rapid decomposition sets in with loss of the valuable constituents. It follows, then, that, with the exception of whey which can be handled at the source, the bulk must be reduced by some method which will not interfere with the success of later processes.

In the course of the writer's investigation it was hoped firstly to work out a satisfactory technical method for the economic extraction of lactose and lact-albumin from fresh whey, and secondly to solve the difficulty of dealing with whey at some distance from the place of its production.

The work carried out has naturally fallen into three parts: Part I, Review of the literature followed by experimental work in the laboratory; Part II, Technical scale operations on the processes worked out in the laboratory; Part III, Technical demonstrations of a method for the national utilisation of whey.

PART I.

If the references and patents tabulated on the last page are consulted, it will be found that the available literature gives a general idea of the methods supposed to be used abroad for the manufacture of lactose. Some of the information given is however not correct and may be misleading. In no case will a sufficiently detailed method be found described to justify immediate large-scale operations. As far as foreign literature is concerned, the only processes given in detail are those purporting to be the methods employed in Germany, of which there appear to be several.

SYNOPSIS OF GERMAN METHODS.

According to the *Milch Zeit.*, 1895, after neutralising with caustic soda to a faint acidic reaction, the whey is concentrated *in vacuo* until it contains 60 per cent. solids. The sugar, after being allowed to crystallise from the albuminous solution, is separated in a hydro-extractor. The mother liquor is heated to coagulate the albumin and after filtration is further concentrated *in vacuo*, whereupon a further crop cf sugar is obtained. The yields are said to be 3·85 per cent. sugar on the first crystallisation and ·5 per cent. on the second, making a total yield of 4·35 per cent. on the weight of the whey.

Woodman (*Journ. Agric. Sci.*, 10, 1, January, '20) has checked this method and obtained the following yields: 3·48 per cent. first crystallisation, ·4 per cent. second, and a third crop of ·8 per cent. or 4·68 per cent. total yield.

It should be noted that the above yields are of crude sugar containing a considerable quantity of albumin. There are no figures available for a fine commercial product produced by recrystallisation of the crude sugar. Woodman (*loc. cit.*) has however recrystallised the first crop of crystals he obtained and found the quality to be 98·63 per cent. lactose when tested by Soxhlet's modification of the gravimetric Fehling method.

The most detailed account of a German method is to be found in Ullman's *Enzyklopadie der technichen Chemie.* In this process, which is said to have been the general one in use as late as 1920, the albumin is first separated from the whey by heating to 85–90°C. with the addition of acid whey or "whey vinegar." The separation of albumin is said to be best when the acidity is 13–14° according to the scale of Soxhlet-Henkel. (One degree by this scale is represented by 1 c.c. $\frac{N}{4}$ alkali per 100 c.c. of whey.) After filtering off the albumin, the whey is evaporated in a vacuum pan at 60-70°C. until it contains 60 per cent. dry solids. When the solution has cooled and crystallised in water-cooled vessels, the sugar is separated in a hydro-extractor from the mother liquor, which, after heating to coagulate more albumin, is filtered and further concentrated and crystallised. The crude sugar, which is sometimes coloured brown owing to caramelisation, is dissolved in about three times its weight of water, and after the addition of ·2 per cent. acetic acid, animal charcoal and magnesium sulphate, is heated to 90°C., whereby a little more albumin becomes precipitated. The liquor after filter pressing is concentrated in another vacuum pan to crystallising point. The separated sugar dried in vacuum ovens is powdered and sieved. This product is generally so pure that further recrystallisation is unnecessary. The yield of crude sugar is given as 4·3 per cent. and the purified product (99·6 per cent. lactose) as 2·5 to 3 per cent. on the whey, representing 50 to 60 per cent. of the sugar content.

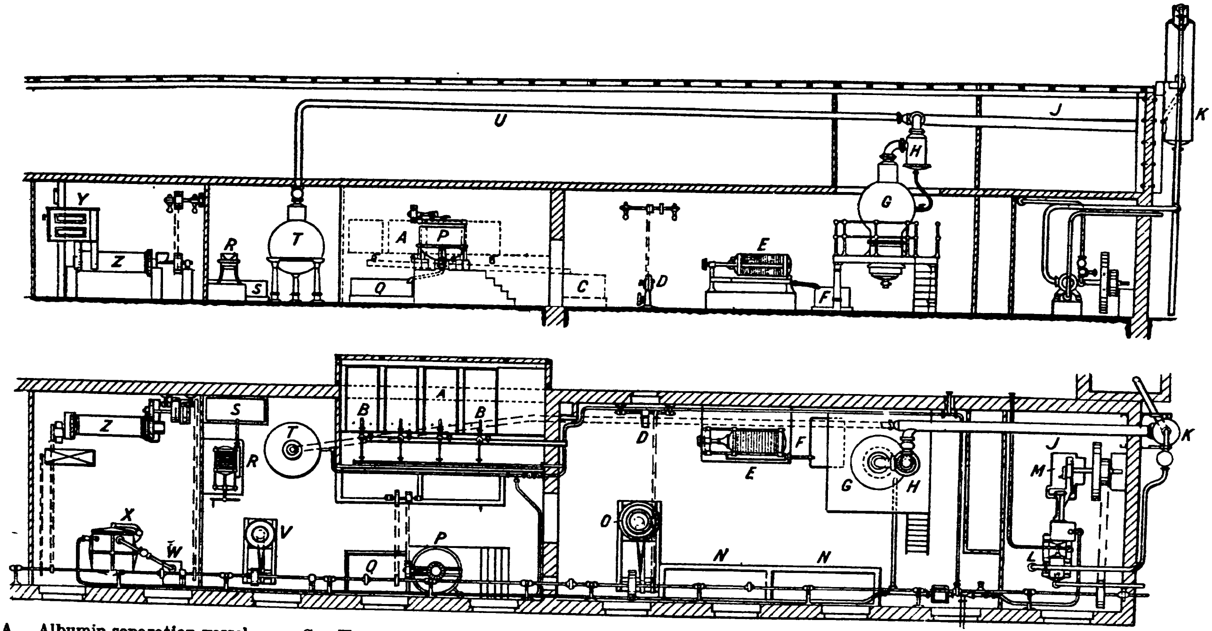
A line drawing of the plant used in this process is given in Fig. 1.

Another description of a process (Aufsberg, *Chem. Zeit.*, 1910, 34, 885) is very similar to the above, 1 to 3 per cent. of acid (whey vinegar) being used to coagulate the albumin. The yield of crude sugar is here given as 4·35 per cent. and the purified product 2·5 per cent.

Woodman (*loc. cit.*) has tried the effect of using acid as a coagulant, and though he does not give the yields of purified lactose his products were of good quality.

The chief difference to be found in these methods relates to the separation of the albumin from the whey. In the first process described no attempt is made to separate any protein before the first crop of crystals is produced by concentration, but in the other processes every attempt is made to remove as much protein as possible before the first evaporation *in vacuo*. Now the author was led to believe that previous workers had not been successful in producing lactose because of the difficulty of reducing the protein to such an amount that the crystallisation of the sugar would not be interfered with. In consequence of this, and in the belief that it was much more rational to attempt to produce a pure product by first removing impurities as far as possible, the author endeavoured to find the most suitable method of protein extraction.

It should here be mentioned that the removal of the protein from whey is one of those problems peculiar to colloidal solutions. Generally it is believed that for the maximum quantity of albumin to be precipitated the iso-electric point (*i.e.* the point at which the electric charge on the particles is neutralised) must be produced by adjusting the hydrogen-ion concentration. Whilst it has been seen that some processes depend upon the addition of still more acid, it appears from a general review of the literature that it is preferable nearly to neutralise the acid already there with some form of alkali. As the whey must not be made alkaline but must be as near neutral as possible, it is clear that neutralisation by means of caustic soda or other strong alkali calls for very careful adjustment. The difficulty is increased with some qualities of whey in consequence of the obscure end reaction with ordinary methods of titration. The author therefore pre-



A. Albumin separation vessel.
B. Steam pipes.
C. Reservoir.
D. Pump for filter press.
E. Filter press.
F. Receiving tank for filtrate.
G. Vacuum pan.
H. Separator or trap.
J. Vacuum pipe.
K. Barometric jet condenser.
L. and M. Air pump, steam driven, water cooled.
N. Crystallising tanks.
O. Hydro-extractor.
P. Purification dissolver.
Q. Reservoir.
R. Filter press for purified solution.
S. Receiver for pure filtrate.
T. Vacuum pan for pure sugar evaporation.
V. Hydro for pure sugar.
W. Air pump.
X. Vacuum drying oven.
Y. Sieve. Z. Grinder.

FIG. 1

ferred a method which would be automatic in its neutralising action, and in consequence selected the use of calcium carbonate, which has a low solubility in water. This reagent is taken up into solution slowly and automatically, and leaves an acidity which is found to be nearly that required for the most efficient coagulation of the albumin. Whilst an excess of chalk can be used in this method without detriment to the coagulation or any further process to which the whey has to be submitted, it is preferable to use a calculated quantity if it is desired that the albumin should be as free from impurity as possible. The best quantity of chalk to employ has been carefully determined by experiment, and it has been found that if the following procedure is adopted an excellent coagulation can always be relied upon, no matter whether the whey is quite fresh or some days old. In addition the albumin so coagulated is easily filtered and causes no trouble in the filter press.

COAGULATION OF ALBUMIN.

A titration of 25 c.c. of the whey should first be made, using $\frac{N}{10}$ alkali and phenolphthalein as indicator. The chemical equivalent in chalk of the number of c.c. of alkali used minus three is added, after raising the temperature of the whey to 70°C. The heating is then continued with agitation until a temperature of 80–85°C. is reached. There is no necessity to heat higher than this, as there is no improvement in the filtration or coagulation by a further increase in temperature, whilst there is a loss of sugar by caramelisation at higher temperatures, and in addition an unnecessary waste of heat. After reaching the prescribed temperature, the whey should be left for about seven minutes before the filtration is commenced. It is not advisable to allow the whey to remain at temperatures above 70° for any longer period than is absolutely necessary, as milk sugar is lost by caramelisation and the molasses are increased. On a technical scale, in dealing with large bulks of whey, which may have to stand overnight before filtration can be carried out, it is advisable to lay on cooling water to the coils in the tubs, so that cooling below 70° can be carried out if necessary. For the same reason speedy heating should be arranged for by fitting coils with adequate heating surface.

In the method of coagulation described we have an automatic neutralisation without complicated chemical control, which is some advantage where parts of the process may be in the hands of other than skilled chemists.

Referring to the method of coagulation given by Ullman (*loc. cit.*), it should be mentioned that the author has not found the acidity stated to be satisfactory. A further neutralisation has always resulted in the precipitation of more albumin and a more sparkling filtrate.

Now the removal of protein by neutralisation and heat coagulation is not complete, and although the German processes outlined gave no indication of any additional treatment for the elimination of the remaining protein, it was believed to be advisable further to clarify the whey and remove as far as possible all albuminous matter which was understood to give trouble in the later stages of technical milk sugar manufacture. A clarification process has therefore been worked out which has given excellent results.

CLARIFICATION OF WHEY.

The method depends upon the reaction between calcium carbonate and aluminium sulphate. This produces aluminium hydroxide and carbon dioxide, which act as clarifying agents, thus :

$$3CaCO_3 + Al_2(SO_4)_3 + 3H_2O = 3CaSO_4 + Al_2(OH)_6 + 3CO_2$$

If desirable, the reagents can be applied at once to the fresh whey without any previous heat coagulation, but the temperature will have to be raised to the heat coagulation temperature 80–85°C., which is higher than the clarification temperature used when an independent heat coagulation has been conducted. A combined coagulation and clarification will of course result in the albumin being mixed with the precipitate of aluminium hydroxide. As the albumin is useful it will generally be preferable to coagulate and filter as previously described and treat the filtrate with the clarifying reagents in a second operation. This of course involves two filtrations against one, so that, should the albumin not be wanted, a distinct saving will be effected by a combined coagulation and clarification. To carry out the clarifying process the whey should first be heated to 65–70°C., when 6 lb. of calcium carbonate (precipitated chalk) can be added, followed by 8 lb. of aluminium sulphate (14 per cent. Al_2O_3) per 100 gallons of whey. The chalk can first be made into a cream with a little water and the aluminium sulphate dissolved in water with the aid of a steam jet. Aluminium hydroxide is immediately precipitated with the production of a frothy scum due to the simultaneous evolution of carbon dioxide.

Another method of clarification which has been used on a technical scale, depends upon a careful neutralisation with milk of lime, followed by an addition of an inert filtering and clarifying medium such as Kieselguhr. The lime is added in such quantity that the final acidity of the whey is represented by 0·25 c.c. $\frac{N}{10}$ alkali on 10 c.c. of whey. The temperature is raised to 68°C.

and 0·56 per cent. Kieselguhr added, the percentage being calculated on the weight of the whey.

In order to determine the relative efficiency of these two clarification processes, the following test was made. A large bulk of whey, after being heated to 85°C. in presence of chalk, was filtered and divided into three portions. The first was evaporated to dryness without further treatment, the second after clarification with chalk and aluminium sulphate, and the third after clarification with lime and Kieselguhr as described. The Nitrogen content in each of the dry residues was then determined by the Kjeldahl method, with the following results:—

No. 1 Per cent. Nitrogen	No. 2 Per cent. Nitrogen	No. 3 Per cent. Nitrogen
1·47	0·74	1·03

If these figures are multiplied by the factor 6·34, we shall have approximately the protein content, viz.:—

No. 1	No. 2	No. 3
9·32	4·69	6·53

The quantity of protein left after a heat coagulation at 85°C. is seen by the protein content of No. 1 to be about 60 per cent. of the whole. There is a definite improvement by both methods of clarification, but it seems impossible to remove the whole of the protein by either of them. This is not surprising when it is remembered that it is not known how the protein exists in whey. It appears that there is an amount existing in true solution which cannot be removed by any means save concentration by evaporation. But No. 2 analysis shows that the clarification method applied by the author produces the best result. Not only is this improvement to be seen in the reduced nitrogen content, but the physical appearance of the evaporated residues was strikingly different, Nos. 1 and 3 being sticky and of the appearance of half-melted glue, whilst No. 2 was an easily powdered mass.

Preparation of Lactose.

Having settled on what seemed to be the most suitable method of removing the protein, the following procedure was adopted on a laboratory scale for the production of pure lactose.

One litre of whey was coagulated by heat, and clarified, using the proportions of clarifying materials prescribed above. The filtrate was evaporated at 60°C. in a vacuum pan to a density of 1·2. The concentrated sugar solution, after standing 24 hours, gave a crop of white crystals having a composition 96 per cent. lactose when analysed by the Defren-O'Sullivan modification of the gravimetric Fehling method. A practically pure milk sugar was obtained by one recrystallisation of this crude product by the use of acetic acid and charcoal as described by Ullman (*loc. cit.*).

Having arrived at what appeared to be a satisfactory method of extracting the lactose from fresh whey, the remainder of the available time in the laboratory was spent in examining the possibilities of drying whey and using the dried product for the manufacture of milk sugar.

DRIED WHEY.

Some cheese factories have of late begun to dry whey on rollers and use the product for the feeding of cattle. Experiments were therefore made to find whether this dried product could be handled profitably for the extraction of the sugar and albumin. Now it should first be remembered that the constituents we hope to extract undergo chemical and physical change when exposed to certain temperatures. In the case of milk sugar caramelisation takes place above 70°C. and increases with increase of temperature. The coagulation of albumin commences at about 73°C., and the albumin in consequence becomes insoluble above that temperature. It will thus be seen that when whey is dried on rollers at atmospheric pressure, the resulting dried product contains caramelised lactose and coagulated albumin, both of which have to be removed if the remainder of the sugar is to be extracted.

Preliminary trials were first made with the dried product to find whether on treatment with water a properly extracted and filterable mixture would result. It was found that if the extraction of soluble substances was to be complete, the material must be ground so fine that it would pass a 60-mesh sieve. Unless this was done, the small lumps of coagulated albumin held the sugar and prevented it from passing into solution. An extraction was carried out in this manner, using water at 70°C. at the rate of three parts of water to one of dried whey. It was found that filtration from the insoluble matter was nearly impossible under vacuum, and it could be seen that filter pressing would not be any more successful with this suspension. On the laboratory scale charcoal was used to assist filtration, but on a large scale the only method of separation likely to be successful would be to use a centrifugal separator of the Gee type.

After these small preliminary tests had shown that a crop of milk sugar crystals could be obtained from the filtered solution, a large quantitative experiment was carried out. 150 grammes of finely divided dried whey was extracted at 70°C. with 250 c.c. water, using 3 grammes of Kieselguhr and 3 grammes of charcoal to assist filtration. The filtrate from this was deep brown, showing the presence of much caramelised lactose. On evaporation of this filtrate at 60°C. *in vacuo*, 60 grammes of lactose crystals were obtained, representing 40 per cent. yield on the original dried whey. It was not found possible to obtain another crop of crystals on further concentration of the mother liquor. As the crude lactose thus obtained required recrystallising to bring it up to a commercial standard, the yield would thus be reduced to much below 40 per cent. It was not worth while proceeding any further, because even at this higher figure it was evident that the present quality of whey dried on rollers at atmospheric pressure is not a product which can be profitably utilised for the manufacture of milk sugar.

Time did not allow of conducting experiments on further samples of whey dried in a similar manner, but this was hardly necessary in order to arrive at an opinion on the matter, for it is highly improbable that a satisfactory yield of lactose could be obtained from dried whey which has been heated to so high a temperature as is necessary in this method of manufacture.

In order to avoid the changes brought about by the use of higher temperatures, attention was directed to the possibility of producing a dried product *in vacuo.*

VACUUM-DRIED WHEY.

Whey was evaporated in a vacuum pan at a temperature of 60°C. or less, but the first products were of a horny nature and difficult to grind. It appeared that in spite of the low temperature employed the albumin had undergone a change. This was also clear from the fact that, when the product was taken up in water, it did not disperse. The conclusion arrived at was that the gradually increasing concentration of the acid in the whey had caused coagulation of some or all of the albumin. Further experiments were therefore carried out with the addition of a small amount of chalk, the quantity depending upon the acidity of the whey. An excellent product resulted, easy to grind to a fine powder and nearly all of it dispersable in water. On extracting the lactose from this dried product the yields were excellent, but unfortunately by accident the figures have been lost, and the remaining time available for laboratory work being short, it was not possible to repeat the work.

PART II.

TECHNICAL SCALE EXPERIMENTS.

This part of the work was carried out at Hilfield, Dorset. The plant used is shown in the line drawing, Fig. 2.

The Dairy from which the whey was received was situated about 20 yards away from the experimental factory. At the time of the completion of the alterations and additions which had to be made to the existing plant, the Dairy was working on Cheddar cheese. Owing to the state of the milk supply the quantity of whey available per day was below the quantity required for convenient working. It was therefore arranged to work two days' whey as one batch, though this involved using whey which was a day old and consequently more acid. The acidity of the fresh whey was generally equivalent to about 3·5 c.c. $\frac{N}{10}$ alkali for 25 c.c. whey, but the addition to the stale whey from the previous day generally increased the acidity to an average of 9. On arriving at the storage tank W.T. by an underground pipe from the Dairy, the whey was pumped by the whey pump to the vat V.1, where it was heated to 85°C. with constant stirring. The acidity of the whey generally called for the addition of 1¼ lb. of chalk per 100 gallons of whey to neutralise the acid as described in Part I. The albumin having been coagulated in this vat, the liquor was next filtered in the filter press F.P., when a clear filtrate resulted, which was collected in the receiving tank R. In the first trials all the fat which was in the whey was filtered off with the albumin as the separator had not arrived. In later experiments, with the separator in use, the rates of filtration with the fat removed was 2½ to 3 gallons per square foot per hour with a close cotton filter cloth. It should be noted in connection with this filtration that at the commencement the pressure should not be allowed to rise, otherwise the length of time of the filtration will be much increased through clogging up the pores with the first lot of albumin reaching the cloth. The size of filter press to be used must be determined by the length of time available for the filtration, but it will generally be found that for economical working the filtration should be carried through in one hour.

The filtrate from the press was next pumped to the vat V.2, where it was again heated by copper steam coils to 65–70°C. and clarified by means of chalk and aluminium sulphate in the prescribed quantities (Part I). The froth which arises in this clarification necessitates ample allowance in the capacity of the vat, the froth occupying a volume equal to about one-half the volume of the liquid. The clarified liquid can be filtered immediately, and it will be found that the aluminium hydroxide is not difficult to filter, as it is when produced by some other chemical reactions. The same filter press was used for the filtration of the clarified liquid as was used for the coagulated albumin, and the speed of filtration was approximately the same. A bright sparkling filtrate always resulted. This filtrate was sucked into the vacuum pan V.P., where it was evaporated at 60°C. or less according to the vacuum maintained. When a sample showed a density of 1·26, the whole of the concentrated syrup was run off into the tray C, where the sugar crystallised on cooling. Although most of the sugar crystallised in less than 24 hours, it

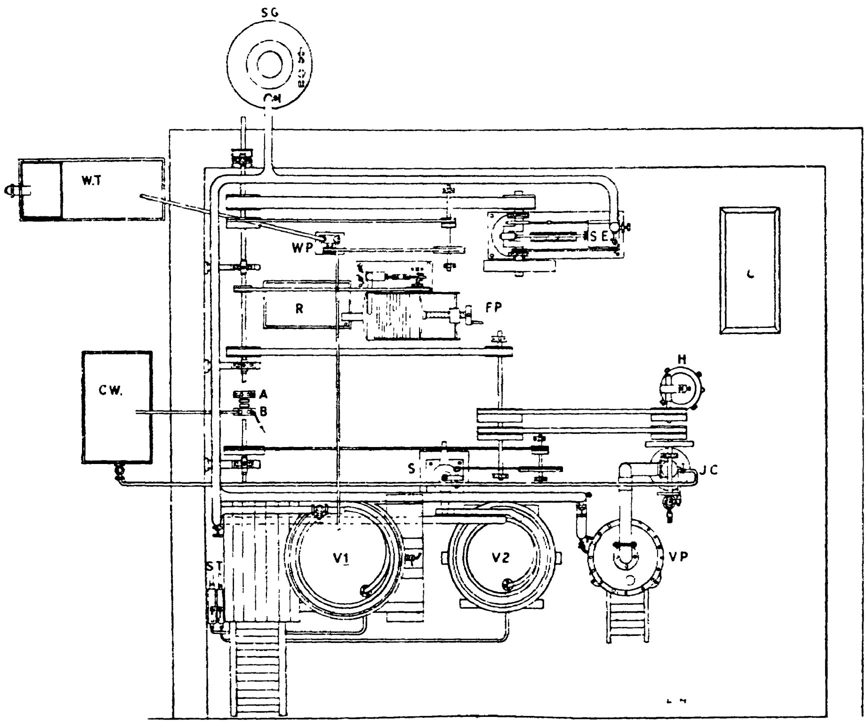


FIG. 2.

V.1.	500 gallon vat fitted with 36 ft. 2 in. copper tube.
V.2.	300 gallon vat fitted with 39½ ft. 2 in. copper tube.
V.P.	Vacuum pan. Working capacity, 30 gallons. Evaporation, 20 gallons per hour. Made in tinned copper. Fitted with coils and jacket.
J.C.	Vacuum pump. Jet condenser in column.
H.	18 in. hydro.-extractor.
C.	Cooling tray.
S.E.	6 H.P. steam engine.
F.P.	Filter press. 12 plates 17 in. dia. Recessor plate type with central feed.
R.	Receiving tank for filtrates.
W.P.	Whey pump, centrifugal plunger type.
S.G.	Vertical boiler, 3 ft. dia., 16 ft. high.
W.T.	Whey receiving tank fitted with cloth filter.
C.W.	Cooling water tank for jet condenser.
A.	Auxiliary pump.
B.	Water pump from reservoir.
S.T.	Steam traps.
S.J	Sharples whey separator.

V.1 and V.2 were connected to the filter press pump by rubber hose-pipe.

was found advisable to leave the mass for 36 hours in order to get the maximum crop. After standing this length of time, the sugar was separated from the mother liquor in the hydro-extractor H fitted with a copper wire gauze of 40 mesh to the inch. The crude sugar so obtained amounted to 3·46 per cent. on the weight of the whey, and was of a pale yellow colour, a slight washing making the product nearly white. On analysis this crude product was found to contain 96·3 per cent. lactose.

The mother liquor from the hydro-extractor amounting to 6½ to 7 gallons per 100 gallons original whey was reconcentrated without further treatment. It gave another crop of crystals and another small volume of mother liquor which represents the molasses from the process.

The yields and analyses of the products obtained are given in Table II.

TABLE II.—*Yields of Lactose, etc., from Fresh Whey.*

Yield of Dry Albumin	Yield of Crude Sugar		Per cent. Lactose
0·65 per cent.		Per cent.	
	First crop .	3·46	96·3
Molasses, 2 per cent. by volume specific gravity, 1·25. Per cent. lactose, 18·7; on the weight of the molasses.	Second crop .	·66	88·8
	Total =	4·12	

Note.—Unless otherwise stated all yields are expressed on the weight of the original whey.

The crude sugar obtained in the above process was purified by the method described by Ullman, omitting the magnesium sulphate, which appeared unnecessary after the clarification process had been applied. Having dissolved the sugar in three times its weight of water, the solution was heated to 85°C. after adding 0·2 per cent. acetic acid and 1 per cent. Norit (decolorising carbon). After being filter pressed the solution was colourless. On evaporation in the vacuum pan V.P. to a density of 1·25 the solution threw out sugar immediately on cooling to a slight extent in the cooling tray. The density named, which is a little lower than the density adopted for the crude, always gave nice crystals of good quality, but the evaporation can with equal effect be carried on until the pure sugar crystallises in the pan itself, any slight over-concentration being corrected by the addition of fresh purified sugar solution awaiting concentration. Whichever method is adopted, the concentration process requires careful working at the final stages if good crystals are to be obtained which can be easily whizzed in the hydro-extractor. Failure at this point will result in much trouble, and the operation can only be carried out successfully after some experience.

After allowing the concentrated liquor to stand until the following day, the pure white sugar was separated from the mother liquor in the same hydro-extractor which had been used for the crude, viz. H, Fig. 2. The mother liquor, being available for further concentration, was added to the next batch undergoing purification.

In Table III will be found the yield of pure sugar (including the mother liquor from a previous batch) and its analysis. The amount of ash is greater than can be allowed, but in this case it is not due to defects in the process itself, but to the bad water supply available at the experimental factory. All the "temporary" hardness in the water came down along with the sugar on evaporation, and thus increased the ash on ignition. This emphasises the necessity for the use of a good supply of water for the purification process, and where good water is not available it would be advisable to collect the condensed steam from about the works and use this for the preparation of the finest quality lactose.

TABLE III.—*Purified Lactose.*

Yield, 2·9 per cent.	Per cent. lactose	99·0
	Per cent. ash	0·51

ESTIMATED COST OF PRODUCING PURE LACTOSE.

The experimental plant described could only deal with 150 gallons of whey per day at the most, and is therefore too small to be of any use for the making of lactose at a profit. The smallest unit for profitable work would probably deal with some thousands of gallons per day, and it may be assumed that during the cheese season crude sugar would be made and during the winter the staff and plant would be engaged on the refining process.

The experience obtained at Hilfield, together with a liberal allowance for the factors which could not be experimentally determined with such a small plant, seemed to indicate that, on the large scale, the costs of production of lactose would be about 8*d.* a pound. In this calculation, the coal consumption is based on triple-effect evaporation and the use of a non-condensing engine working on a closed exhaust and using steam at the rate of 35 lb. per b.h.p. hour. The capital expenditure for estimating depreciation is based on prices recently obtained, together with a liberal allowance for cost of erection and other doubtful factors. With regard to the yield of pure lactose, it is advisable to calculate on a lower figure than was actually obtained, to allow for works losses which frequently occur. The cost has therefore been based on a yield of 2½ per cent. on the weight of the whey. It must be understood that the figure of eightpence a pound is only an estimate, and is not the result of actual large scale experience.

PART III.

SUGGESTED SCHEME FOR THE NATIONAL UTILISATION OF WHEY.

Whilst whey dried on rollers at the cheese factories and handled in a central factory for the extraction of lactose looks a promising solution to the problem of transport, etc., there are certain disadvantages in this scheme. To extract lactose from dried whey means that it has to be taken up into solution again, filtered and evaporated before the first crop of crude sugar is obtained. This involves not only an additional evaporation but the labour, plant and buildings for carrying it out. In addition, the dried product would have to be produced *in vacuo*, involving the use of expensive vacuum roller driers. For these reasons in particular it appeared to the writer early on in the investigation that it would be preferable to concentrate the whey to a syrup only, and not go down to dryness. The factors which seemed to require determining in connection with the handling of a syrup on a large scale were the keeping properties of the concentrated whey and the economy with which the lactose could be extracted from it. Supposing that the sugar would satisfactorily crystallise from the highly albuminous concentrate, then it would appear that the concentration of the whey could be carried out at the cheese factories to such a degree that the first crop of crude sugar would only require removing by hydro-extraction on arrival of the material at the central factory. Not only did this appear of considerable importance, but the comparatively simple and inexpensive apparatus required for concentration would recommend the method to the cheese factories.

As will be seen, these first considerations have been more than justified by the technical experiments carried out on this method. Good yields of sugar have been obtained on a large scale, and, judging from the samples of condensed whey in hand which are some months old, the keeping properties are excellent. In addition, it has been found in the course of the work that the albumin in the whey can be extracted without coagulation, thus providing an albumin which may have considerable scientific interest and economic value.

LACTOSE FROM CONDENSED WHEY.

The production of condensed whey and its subsequent treatment for the manufacture of lactose was carried out on a technical scale in the plant described in Part II.

Fresh whey from Caerphilly cheese having an acidity equivalent to 7·2 c.c. $\frac{N}{10}$ alkali on 25 c.c. whey, was warmed to 45°C. in V.1, and the fat was thereupon separated in the Sharples separator. Neutralisation with calcium carbonate having then been effected in V.2 as described in Part I, the whey was immediately evaporated in the vacuum pan to a density of 1·26 (about 1/10th the original volume). On running this creamy liquid into the cooling tray C, not only did the sugar crystallise out perfectly, but a certain amount of uncoagulated albumin also separated out at the same time. Now there are two ways of dealing with this mixed suspension of albumin and sugar. It can either be whizzed in an ordinary hydro-extractor fitted with a wire gauze, when the albumin will pass through with the mother liquor leaving the sugar in the basket, or it can be separated in a Gee centrifugal separator, which will give a grading of the solids left in the drum, *i.e.* the albumin at the top and the sugar below. The former method is preferred for this first separation. The sugar which is thus separated is of high quality, as will be seen from the analysis, and it can be brought immediately to a still higher quality and colour by washing in a hydro or by elutriation, when the greater part of the albumin associated with the sugar will be floated off. The exceedingly high quality of this washed sugar will be seen on reference to Table IV.

The mother liquor from the crude sugar separated on a wire gauze was again concentrated in the vacuum pan. This can usually be done without further treatment, but if this liquor has become acid through standing, another addition of chalk can be made in proportion to such acidity. Having concentrated to a density of 1·26, another crop of sugar and albumin separated on cooling. Again this mixed suspension can be dealt with by either of the methods described above, but, as the albumin is wanted, it can at this stage be obtained by grading the solids in a Gee separator. This has actually been done by the writer at the experimental works of the Gee Centrifugal Separators, Ltd., and therefore it can definitely be said that the albumin produced in the manner described can be obtained by this mode of separation. Although this process is quite satisfactory, it may prove better when working on a very large scale to separate the albumin before the second crop of sugar is actually crystallised. Supposing that the albumin is wanted in the coagulated form which can be filtered in a filter press, then the mother liquor can be heated to coagulation temperature under the same conditions as fresh whey before concentration for the second crystallisation. But whichever method is adopted the result will be the same, viz., that a good second crop of sugar will be obtained and a good yield of albumin partly in a soluble state or coagulated as the case may be. It has been found that samples of the uncoagulated albumin, even after standing for nearly a fortnight, had not gone bad, and 7 per cent. was still soluble. It is therefore expected that, with facilities for drying this new form of lact-albumin, a product will be obtained which will be largely soluble. Now a point of importance to note is that not only is a second crop of sugar obtained, but the remaining mother liquor is so clean and materially free from any appearance of caramelised lactose that it is possible to obtain a third crop of sugar with ease. This third crop is small, but it may pay to extract when dealing with large quantities. The final molasses are not brown like the usual molasses from lactose, but are grey in colour. By heating the molasses to coagulation temperature the uncoagulated albumin can be recovered with ease.

The crude sugar obtained by this method was purified by one recrystallisation in the same way as that obtained by the coagulation process previously described. Again, owing to the quality of the water and other difficulties associated with a place which was not erected to manufacture perfectly pure products, the quality is not as good as it needs to be for sale in competition with foreign makes. There need be no fear, however, that the purification process is at all at fault, as pure products have been made from the same crude sugar under correct conditions.

Table IV gives the yields, etc., of sugar obtained by this process. It will be seen that the yield is higher than by the first method described. The writer is inclined to believe that quite apart from the convenience of this method for the handling of whey at some distance from the place of production, it is the best and easiest method for the manufacture of lactose generally.

TABLE IV.—*Lactose from Condensed Whey. Analyses and Yields.*

Condensed Whey	Crude Sugar		Purified by One Recrystallisation	
Per cent. Lactose 39	Yield per cent.	Per cent. Lactose	Yield per cent.	Lactose per cent.
Per cent. Nitrogen	1st crop 3·8	92·1	3·2	98·4
1·21	2nd ,, 0·56	92·3	Ash .	. 0·96
= 7·67 per cent.	——			
protein (factor	Total = 4·36			
6·34)	Washed by			
	decantation,	98·2		

Molasses, 1·5 per cent. by volume on original whey; per cent. lactose, 19·8; per cent. protein, 13·0.

In order that some idea could be gained as to the cost of manufacturing condensed whey on a small scale with plant not planned for economical working, the following test was carried out at Hilfield. The coal to be used in the boiler was weighed before lighting the fire and the unconsumed coal was deducted at the end of the day. The fire was practically out when the day's work was over, so that little was lost in the grate. The boiler was filled with water to a mark on the gauge-glass, the mark being made after the boiler was under 60 lb. pressure with the stop-valve closed. All the water used during the day was measured, the temperature taken, and at the end of the day the level of water in the gauge-glass was made up to the mark at the same pressure as before. The condensed steam from the vacuum pan was weighed and the steam consumption thus calculated. It should however be noted that—

(1) The vacuum pan was a single-effect pan working on live steam.

(2) The line shafting, counter-shafting and belting were running continuously, and the amount of power wasted here was out of all proportion to the work being done. (30 ft. 2 in. shafting and 130 ft. 4 in. belting.) The 2 in. steam piping was insulated with about 1 in. asbestos composition and the length in use amounted to 134 ft. These figures would all be reduced if the concentration were taking place in an established factory.

Coal consumption, 540 lb.
Weight of feed water evaporated, average temp. 50°C., 3,959 lb.
Weight of steam used in condensing 100 gallons of whey, 945 lb. = ·95 lb. water per lb. of steam (rather high efficiency considering the loss which must have occurred by radiation).
Water used in jet condenser, 2,700 gallons.
Vacuum, 25 in.
Cream obtained from separator, 3½ lb.
Condensed whey, 128 lb.

Cost of producing condensed whey on this small scale five days per week for 150 *days.*

	£	s.	d.
Coal, 36 tons at £2 9*s*. per ton delivered Hilfield	88	4	0
Wages, 30 weeks at £3	90	0	0
Depreciation on plant at 5 per cent. on £400	20	0	0
Whey at ¼*d*. per gallon	6	5	0
Sundries	1	0	0
	£205	9	0

Condensed whey produced, 19,200 lb. Cost per lb. = 2½*d*.

The above figure therefore represents the very worst, the output being very small for the labour involved and the single-effect evaporation being comparatively uneconomical. By using triple effect evaporation on quantities like 5,000 gallons per day and arranging for other economies in production, the cost will become very low.

Assuming that the cheese-makers were prepared to put in condensing plant, then the central factory could probably afford to pay such a price for the condensed whey that the makers would see a satisfactory return and the central factory would be able to extract the lactose at a reasonable profit. There seems little doubt therefore that this system of handling whey throughout the country is most suitable, and it is to be hoped that, now that the details of the process have been worked out, the parties interested will take steps to launch this new industry. They would thus do away with a nuisance and prevent the risk of prosecution by local authorities, give the country an additional source of income, and provide employment in the handling of what has hitherto been a waste product.

LEONARD HARDING.

The Cottage,
Storey's Way, Cambridge.

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WENSLEYDALE SHEEP.

HISTORY.

THE early history of some of our breeds of sheep is no longer to be traced, for many of those who laboured for their improvement have done so in obscurity. In the case of the Wensleydale breed, however, the record has been fairly well preserved. There is but little doubt that it is the direct descendant of the now extinct Teeswater, which, in turn, probably sprang from the same common ancestor as the old Lincoln. The early references to the Teeswaters bear this out. Thus Culley, in his *Observations on Live Stock* (1807), states: "This kind differs from the Lincolnshire in their wool not being so long and heavy, in standing upon higher though finer-boned legs, yet supporting a thicker, firmer, heavier carcass much wider upon their backs and sides, and in affording a fatter and finer-grained carcass of mutton." Professor Lowe, in *The Breeds of Domestic Animals of the British Islands* (1839), stated: "The most remarkable of the inland breeds was the old Teeswater, so named from the valley of the beautiful river which separates the counties of York and Durham. This valley is exceedingly fertile, though of limited extent; but the breed to which it gave a name extended with some change of characters, northward into Durham and southward through the greater part of Yorkshire, until it merged in the heavy-woolled sheep of the marshes on the one hand, and those of Leicestershire and the other Midland counties on the other. The true Teeswater sheep, as reared in their native valley, were of a large class, very tall, bearing a long but not very thick fleece, inferior only in toughness and length of filaments to that of the ancient Lincolns. The wool was, however, more hard, less uniform in staple, and very coarse towards the extremities. These sheep were of an exceedingly uncouth form; they had coarse heads, large round haunches and long stout limbs. They were slow in fattening and required for their support good pastures with a supply of hay and corn. They were the most prolific of all our races of sheep, bearing usually two and not infrequently three lambs at a birth; and they were surpassed by no other sheep in the faculty of yielding milk."

The introduction of the Teeswater into the beautiful North Riding valley of Wensleydale probably took place during the latter portion of the eighteenth century, since prior to that period records exist which show that sheep of the heath breeds were formerly kept. In this connection it is interesting to notice that the Teeswaters in Wensleydale went under the supposedly local name of "Mugs" or "Muggs." It would appear, however, that the term "Mug" was applied more generally. Thus in Bailey and Culley's *Agriculture of Northumberland* (1797) occurs the following: "The long-woolled sheep, which formerly occupied the lower district of this county, were called Muggs, probably from their faces being covered with a muff of wool, close to their eyes. These being a slow-feeding tribe have given way to the Dishley breed, which were first introduced in the year 1766." Again, in Pringle's *Agricultural Survey of Westmorland* (1797), it is stated that "twenty Lincolnshire Mugg ewes, that had been tupped by a ram of Mr. Bakewell's breed, were brought into Westmorland in the month of December, 1789, and lambed in February, 1790. These Mugg ewes were tupped in 1790 by a common Westmorland ram, and the dinmonts produced by this cross have turned out the best sheep in the county, and weigh from 18 lb. to 20 lb. a quarter, and are thought to be superior to those of the first breed." Now it is highly probable that the Muggs referred to both in Northumberland and in Westmorland were really Teeswaters and not Lincolnshires in the latter county, and that "Mugg" was a synonymous term for a Teeswater sheep.

The proof that the Mug sheep of Wensleydale were Teeswaters is furnished from several sources. A description by an old breeder of the Mugs before 1840 stated: "They were of a large size, standing high on the leg, of a good length, and with particularly good strong loins and legs of mutton. Their great defect was behind the shoulder and a want of thickness through the heart, while their necks were long and weak. The wool was nicely curled and of good quality, and the head and ears white, with black spots—one of the chief characteristics of the old Teeswaters."[1] It is known that some of the ancestors of past and present breeders of Wensleydale sheep actually brought Teeswater flocks into Wensleydale at the beginning of the nineteenth century, and that they were of a similar class to the sheep already bred in the dale.[2] It is also interesting to note that in North Lancashire and parts of Westmorland, even at the present time, the Wensleydale sheep are frequently called Teeswaters, which tends further to establish the definite Teeswater origin of the modern breed.

From the preceding account of the Teeswater or Mug sheep it will be readily appreciated that when the general movement towards a higher standard was universally demanded by the success of the improved Leicester in the hands of Bakewell and his contemporaries, the breeders of Teeswaters in Wensleydale were not slow to recognise defects in their sheep. The pioneer in this respect was Mr. Richard Outhwaite, of Appleton, who had a very select flock of Teeswaters, in which he took great pride. In 1838 Mr. Outhwaite hired for one season a very big Leicester ram from the famous Leicester breeder, Mr. Sonley, of Lund Court, Helmsley, the services of which cost 40 guineas. The outstanding features of this Leicester ram were his enormous size and substance, the possession of a very blue head, while he was considered to be the finest ram ever bred by Mr. Sonley. This animal sired the ram which can definitely be regarded as the maker of the Wensleydale breed. This ram was *Bluecap*, which was born in 1839, and he possessed unique qualities which it will be seen were transmitted to his progeny, and to a considerable extent determined the type of the Wensleydale breed. *Bluecap* was an extremely wild and active sheep in spite of weighing over 32 stones as a two-shear, and possessed a very dark blue head, while his skin was nearly black, although covered with fine white lustrous wool, and he was stated to be the best ram in the North of England in his day. He was considered good enough to exhibit at the R.A.S.E. show at Liverpool in 1841 when he was a two-shear, and in this connection this ram made history. It appears that at that time neither the masters nor men were allowed to enter the showyard until the Judges had made their awards, and the Society undertook the task of placing the sheep in their right pens. Mr. Outhwaite, in addition, had entered a shearling ram, but the employees of the Society put the two sheep in their wrong pens—*Bluecap* was placed amongst the shearlings. This caused *Bluecap* to lose the prize, which competent judges stated he would have won, and to bear this out Mr. Outhwaite refused an offer of 100 guineas for him. This mistake caused such an outcry from exhibitors and breeders that the Society altered the system of entry to the showyard to the one obtaining at the present day.[1]

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[1] *Wensleydale Blue-faced Sheep Breeders' Flock Book,* Vol. I.
[2] *Wensleydale Longwool Sheep Breeders' Flock Book,* Vol. I.

Mr. Outhwaite used *Bluecap* successfully on his Teeswater ewes, while the ram was also hired by other breeders, including his brothers, and Capt. Harcourt, of Swinton Hall, near Masham, during a period of 8 or 9 years. As a result of this crossing a great trade was soon established for the sons of *Bluecap*, which were widely used throughout Wensleydale on the Teeswater or Mug flocks. The effect of this subsequent crossing produced a race of sheep which combined the splendid qualities of hardiness, activity and lean flesh of the Teeswater, with the symmetry and early maturity of the improved Leicester. The weak points in the fore-rib, shoulder and neck were strengthened, and at the same time the great length of side and large legs of mutton were preserved. Another effect, which had a marked influence on subsequent type, was that the deep blue tinge of the head, ears and skin of *Bluecap* was inherited by many of his progeny from the spotted-faced Teeswater ewes. Previous to this the Teeswaters in Wensleydale had formed a reputation for making a successful cross with Black-faced Mountain sheep, and when the improved sheep were used for this purpose it was found that rams with blue heads sired lambs with darker mottled face and legs. In turn, it was found that cross-bred lambs having this darker mottle-colour were more attractive to the eye and hence brought more money in the sale ring; consequently the cultivation of the blue coloration in the pure breed became a *sine qua non* with breeders. It will thus be seen that the whole of the old Teeswater or Mug breed was in the melting-pot, so far as type went, from the birth of *Bluecap*, and in the whole history of animal breeding the outstanding influence of this sire in moulding an improved breed is probably unique. It is unique too in that no sweeping out-crossing was practised, for the Leicester "blood" was introduced through one animal and transmitted in "diluted form" to the Teeswater flocks, thus safeguarding the improved breed from becoming tainted with the commercial weaknesses of the Leicester breed at that time. It is perhaps fortunate that the period during which the Wensleydale sheep was being modelled on its improved type was the time when its crossing merits began to be valued outside its native district. As early as 1840 large numbers of rams were bought and walked into the South-West of Scotland from Wensleydale for crossing on the Black-faced Mountain sheep—Mr. Thomas MacQueen being the pioneer of the breed across the Border. That the trade was an important one is quite evident from the fact that on September 18, 1847, Mr. MacQueen was presented with a silver snuff-box "By the Tup Breeders of Wensleydale, Yorkshire, As a Token of Esteem for his Encouragement of the Breed"—such was the inscription. This conclusively shows that the breeders of these sheep were banded together at that time, and thereafter one can judge that the breeding of a uniform type occupied their attention.

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[1] *Ibid.*

The breed came under the beneficial influence of the Yorkshire Agricultural Society in 1876, which in that year commenced to give prizes for the breed. It was on the suggestion of the late Mr. T. Willis of Carperby—the bearer of a name much honoured in Wensleydale circles down to the present day, and whose flock was founded in 1814—that the breed assumed the present-day designation of "Wensleydale." The first occasion on which the Royal Show awarded a separate classification was at the York Show in 1883.

Flock Book status was accorded the breed in 1890, under the title of the Wensleydale Longwool Sheep Breeders' Association. An unfortunate divergence of views arose, however, concerning the acceptance of rams for registry. The majority of the Council formed wished to deny the benefit of registration to any ram used previous to 1889, which was contrary to the Society's rules and ignored the fact that some of the older breeders could prove the purity of the rams used for twenty years previously and wished to register them. This right being denied to the older breeders, they resigned and founded the Wensleydale Blue-faced Sheepbreeders' Association. The division of breeders into two rival societies continued until 1919, prior to which it had become very evident to breeders that the dual representation of one and the same breed was deterrent to progress and prosperity. Negotiations for amalgamation were instituted, which resulted in the "Blue-faced Society" accepting *en bloc* the flocks of the "Longwool Society's" members, but enforcing the condition that no ram could be accepted for entry unless possessed of three registered crosses of "Blue-faced" blood. In addition, the amalgamated society reverted in name to that of the original one—*viz.*, the Wensleydale Longwool Sheep Breeders' Association. Thus ended a feud between breeders which at times had aroused much bitterness, as well as proving costly to the breed itself, and in 1920 a new era commenced with the publication of Volume I of the new society or Volume XXXI of the old "Blue-faced" Society.

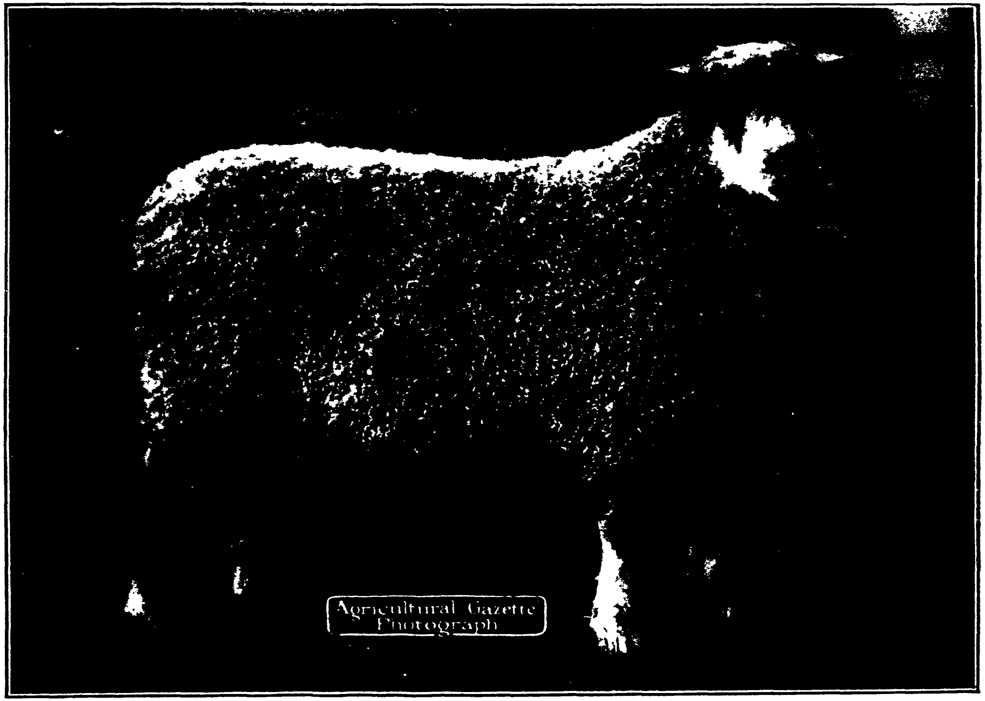
TYPE CHARACTERISTICS AND PROPERTIES OF THE BREED.

The extensive use of Wensleydale rams for crossing on ewes of the Black-faced Mountain breeds has determined the type to a great extent. In size the Wensleydale is not so massive as formerly, and the general conformation is that of a first-class mutton sheep. The body is one giving great length and depth of side with good breadth, while the tendency with breeders is to favour short-legged animals possessing good strength of bone. The flesh-covering is firm, and there is a freedom from that coarseness and patchiness which is apt to be the drawback of longwool breeds.

The head-points of the breed are distinctive. Breeders aim at good-sized heads in both sexes—frequently being Roman nosed—which at the same time are carried on a strong neck of good length. The well-carried head and neck of the Wensleydale is a strong feature of the breed, since it conveys alertness and activeness of frame. The skin of the head and ears of typical sheep possesses a deep blue coloration which often extends to other parts of the body, including the legs. Concerning this colour question, show-ring fashion demands that there should be no light speckled markings on the ears, and that a deep blue colour is preferable to a coppery tinge. The face and ears should be free from coarse hair, which feature tends to give the face a clean and blood-like look, and the legs should correspond. "Hardness" of face, as excess of hair is termed, is sometimes overcome by vendors of crossing-lambs shaving off the hairs, thereby setting off the desirable blueness of face; but breeders prefer a naturally "clean" face to one so rendered artificially. Instead of hair, fine pirled wool is encouraged. The ears are of good size and well carried, while the poll of the head should be well covered with wool. In this respect the Wensleydale has altered somewhat from the early type, in which the head was only thinly covered with wool. Experience has shown that a well-covered head affords greater protection from flies and sun. So far as the legs are concerned, a covering of finely pirled wool is particularly favoured, instead of coarse hair. In some sheep there is a tendency for brown and grey hairs to occur on the back of the hind legs below the hock. These markings, while not a disqualification, are not popular with good breeders.

Wool.—The wool of the Wensleydale is also distinctive. The body is well covered with wool of a bright lustrous character, with a round staple of great length and medium breadth, and pirled to the very end. On examining the fleece *in situ* it should open to the skin and the staple should be even all over the body. Wensleydale breeders have made the fleece a special feature in their efforts at improvement, and as a result they claim to have produced the finest lustre longwool in existence. Mr. S. B. Hollings, the well-known wool specialist, says: "The wool of the Wensleydale breed of sheep ranks amongst the first for lustre and length, and serves an excellent purpose in producing lustre yarns which are largely used in connection with the production of worsted fabrics. *It is rather finer in quality than the other breeds of British lustre longwools.* There is about the fleece an attractiveness that appeals to buyers of this class of staple, and the manufacturers of the world are able to consume quite comfortably all that is produced, and could take much more." As for the amount of wool which can be clipped, the average is from 8 to 9 lb. of washed wool per head.

Mutton.—With regard to the carcass properties of the breed, the Wensleydale stands in a position to challenge competition with the other Longwools. The carcass possesses a remarkable proportion of lean flesh of superior quality, and the finely-grained mutton is undoubtedly inherited from its Teeswater ancestor. The fact that all the breeders are ram breeders, and that the demand for



WENSLEYDALE RAM. ROYAL RINGMASTER, 2913.

Born in 1920. *Bred by* MR. JOHN A. WILLIS, *Manor House, Carperby, Yorks.*

rams absorbs the supply, explains why there is little exhibition of wethers at the Smithfield Fat Shows. But it is interesting to note that pure-bred Wensleydale wethers when sold at Smithfield have realised as much per pound as Scotch Mountain, Cheviot or cross-bred wethers half their weight, which in itself goes to prove the good properties of Wensleydale sheep as mutton producers.

Weights of Typical Sheep.—In order to furnish some idea of the size of Wensleydale sheep, the following weights were supplied by Mr. G. Goland Robinson, the late Hon. Secretary of the Wensleydale Association, and who was responsible for the famous Underley flock (now dispersed), which during the past 28 years has played an important part in Wensleydale circles.

	Average of 10	Highest Weight	Lowest Weight
	lb.	lb.	lb.
Shearling Rams (18 months old) . . .	261·7	278	240
Shearling Ewes (18 months old) . . .	209·5	236	192
Ram Lambs (6 months old)	143·3	156	136
Ewe Lambs (6 months old)	118·3	140	108
Old Rams	—	290	280

In each case the above weights are of sheep prepared for exhibition purposes during 1922, with the exception of the old rams, which were in ordinary conditions. *Royal Maidstone*, when shown at the R.A.S.E. York Show as a two-shear, weighed 448 lb., but excessively heavy sheep are not so popular with the butcher.

Hardiness.—The hardy and active qualities of the breed to a great extent have been encouraged by the demands of cross-breeders. Ewes of the Mountain types are both active and hardy. They run on extensive areas of hill-land, and any ram which is used must be able to follow them on their native heaths and at the same time be able to exist on the rough fare provided on these runs. These demands have been successfully met by the Wensleydale, which can thus claim to be a true triple-purpose animal, *viz.*, a combination of good mutton, good wool and hardy constitution. It is a proud boast of the Wensleydale breeder that wherever a Mountain ewe can go, there also will the Wensleydale ram make his way.

Fecundity.—The prolific breeding properties of the Wensleydale are well known, and there are few breeds which can equal it in producing so many lambs. It is a common occurrence to have more doubles and triplets than single lambs, while the ewes are excellent nurses, having a reputation for milking well. These properties again are directly descended from the Teeswater ancestor.

Early Maturity.—Textbook descriptions of the Wensleydale still persist in charging the breed with not being as quick in maturing as the other Longwool breeds. But in respect of this quality breeders have made rapid strides in recent years, and it will be patent to anyone who examines the progeny of good Wensleydale rams, when used for crossing purposes, that in respect of early maturity they cannot be adversely criticised to-day.

CROSSING PROPERTIES.

Sufficient has been written to show that the principal cross for which the Wensleydale is employed is with ewes of the Black-faced Mountain types, of which there are several. It is the usual practice in districts supporting hill-flocks to have a regular drafting of ewes. These hill ewes, after carrying three or four crops, as the case may be, of pure-bred lambs, are mated with a lowland ram to produce cross-breeds either for the fat market or for breeding purposes. The two lowland breeds which command the support of cross-breeders are the Wensleydale and the Border Leicester, and they naturally compete with each other. The extra money value of the Wensleydale cross has been demonstrated at the principal sales where both crosses are offered, usually making several shillings per head more money. This has been particularly borne out at the Ayr lamb sales (1922), where the Marquis of Bute's Wensleydale cross lambs topped the market.

A considerable amount of care is exercised by judicious breeders of cross-bred lambs from Black-faced Mountain ewes in selecting a suitable ram. There are three types of these ewes, *viz.*, the Scotch, Rough Fell and Swaledale. For Rough Fell ewes the Wensleydale type which is favoured is a ram possessing a very fine staple of long wool, not too closely set on the body, while too much cover on the head and legs is not liked. A good deep blue colour is necessary, some breeders preferring a ram having a dark roof to his mouth and dark spots on the skin. For Swaledale and Scotch ewes stronger and heavier-coated sheep are used. The terms used for Wensleydale cross sheep from Black-faced Mountain ewes are : Mashams in Yorkshire, Half-breds in Westmorland, Greyfaces in Cumberland, and Yorkshire Crosses in Scotland. The cross-bred ewes make excellent breeding sheep, for which purpose large quantities are bought, and are usually mated with Down rams, although in the Wensleydale breeding area the Wensleydale ram itself is frequently used again as a second cross and gives a very good type of sheep. This latter cross, known as "Wensleydale twice crossed sheep," makes one of the finest turnip-feeding sheep, and butchers state they provide better mutton even than the Mashams.

The other hill breeds with which the Wensleydale is mated are the Herdwick and Cheviot, both of which are a good cross, while it is also being used with success on Kerry Hill and Welsh Mountain ewes.

That the Wensleydale possesses qualities which make it a valuable breed for crossing on to Down and other Longwool breeds is already well established in practice. The Wensleydale-Suffolk cross is well-known both in East Anglia and in the South of England. At the Basingstoke Christmas Fat Show (1918) the championship pen of sheep were of the following cross: Southdown-Wensleydale-Suffolk, with live weights of 174, 170 and 160 lb. respectively. The reserve championship pen were Wensleydale-Suffolk cross, with live weights of 237, 222 and 218 lb. respectively at 10 months old and fed entirely in the open.

An increasing number of Romney Marsh sheep-breeders are crossing their ewes with Wensleydale rams. The initial success of this trial is recorded by Malden in *British Sheep and Sheepbreeding*, where he relates that Mr. Hobbs of Brookland "tried the Wensleydale cross with considerable success. As lambs he was much dissatisfied with them, but as wethers they made a considerable sensation in the Rye market in 1914, where they sold at very high prices, the butchers showing great keenness in buying after the first batch had been killed and their properties recognised."

In the Leeds University cross-breeding trials the Wensleydale ram headed the list every time when mated with Lincoln, North Country (Border Leicester × Cheviot cross) and Masham ewes, the rams with which it competed being Leicesters, Lincolns, Hampshires, Oxfords, Suffolks, and Shropshires.

DISTRIBUTION OF THE BREED.

The principal breeding areas occur in the counties of Yorkshire, Lancashire, Westmorland, Cumberland and Durham; also in the South-West of Scotland and Co. Dublin in Ireland. In a great many cases the holdings in the North, particularly the lower-lying farms in the sheep-farming districts, are by no means large. In consequence of this, Wensleydale sheep are only kept in comparatively small flocks. This explains why comparatively few breeding ewes come into the open market. The following analysis of the registered flocks in respect of number of ewes shows that the number of small flocks far exceeds the large flocks.

No. of Ewes put to the Ram.

	1–10	11–20	21–30	31–40	41–50	51–60	61–70	71–80	81–100
No. of registered flocks . .	74	51	21	10	9	2	0	1	1

(Revised figures for 1922.)

The breed is raised with success under a wide variety of conditions, such as obtain in the counties in which it is kept. Its native district is a limestone-soil district, but it gives equally good results on other soils. The farms are largely down in permanent pasture, though those with arable land in addition can usually push their sheep forward more rapidly.

The majority of the rams are sold as lambs, being offered at special sales conducted by the breed association at the beginning of October.

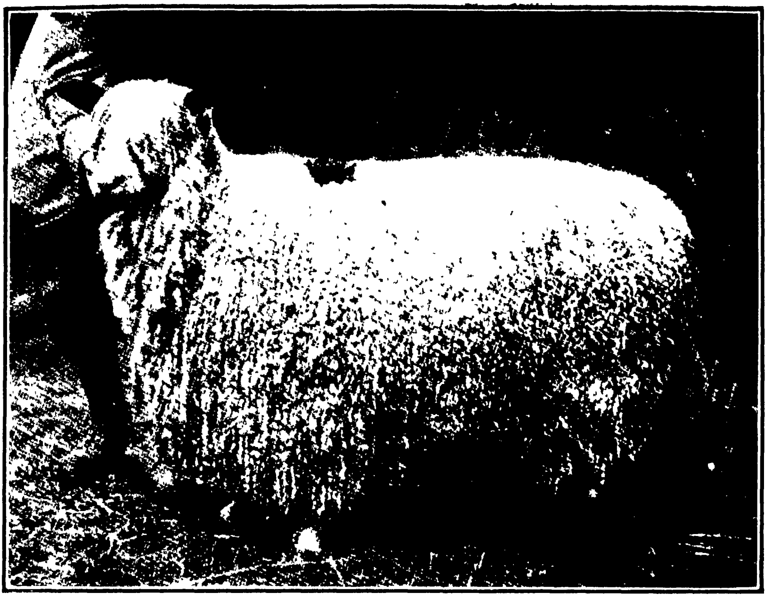
The prices obtained for good breeding sheep are very high, especially in the case of females. The Underley flock, which was one of the most noted flocks within the breed, when dispersed in September, 1922, yielded the following averages, which can be taken as representing the normal values for the year :—

	No.	Highest Price	Lowest Price	Average		
		£	£	£	s.	d.
Shearling Ewes	27	30	5	13	17	9
Flock Ewes	66	23	3	8	5	11
Ewe Lambs	34	16	3	7	0	7

The prices for rams during 1922 have ranged up to £82 for stud rams, £45 for shearling rams and £31 for ram lambs. The averages for good batches of shearling rams for crossing is about £14 per head, and for ram lambs about £7.

Flock Management.

Since the district in which the Wensleydale has been raised and kept is largely permanent grassland, the breed must be regarded largely as a grassland sheep, but it should be observed that many good flocks are kept under mixed farming conditions, which provide a certain amount of arable crops. Close-folding,



Yearling Wensleydale Ewe in Full Fleece.
The Property of Mr. John A. Willis, *Manor House, Carperby, Yorks.*

Group of Shearling Wensleydale Rams.
Bred by Lord Henry Bentinck, M.P., *Underley Hall, Kirkby Lonsdale.*

however, is practically unknown in the North of England, and the means of consuming root and forage crops is either upon the grassland or in fairly large open folds.

It should be borne in mind that there are certain limitations with regard to the keeping of the Wensleydale. While the breed itself is extremely hardy, and rams are capable of living where a mountain ewe can thrive, yet it must not be assumed that the breeding flocks are kept under these conditions. It is essential that Wensleydale flocks kept for ram breeding, as they are in their entirety, should have access to good sound land. In one sense altitude is of little account, for there are flocks equally as good in the dales of Yorkshire as on the sea-coast farms of Lancashire, and *vice versa*, but at higher altitudes the grazing must be good if the sheep are to compete with those bred on the lower-lying lands. The extended use of ram lambs in preference to older sheep for mating purposes is also a feature in the cross-breeding markets, and to get a well-grown lamb fit for service in the year in which it is born, better conditions are demanded than those associated with unenclosed and unimproved hill and moor land.

The Mating Season.—In most of the flocks the rams are loosed to the ewes in the first week in October, which makes the commencement of the lambing season to be about the beginning of March. On the lower-lying farms in an early district an earlier mating is sometimes practised, but in the case of high-lying grass farms too early lambing means a heavier expenditure on purchased concentrated foods, although these lambs are more forward for exhibition and sale purposes. Shearling or two-tooth ewes may be held back from the ram for a week or so after the older ewes. The practice of "flushing" ewes, so common in many of the Down and other lowland breeds, is seldom practised with the Wensleydale. The difficulty which confronts most breeders is that the ewes tend to produce too many lambs rather than too few. Where oat stubbles exist, they are frequently run over these prior to mating, but otherwise grass is their only diet at this time. The rams are exceedingly fertile. Lambs are usually allowed up to about 30 or 35 ewes, while shearlings and older sheep manage on an average up to 80, and some rams have successfully covered 120 ewes in a season. Some breeders use their rams for both pure-breeding and for cross-breeding in the same year. The pure-bred ewes are mated first, after which the draft-mountain ewes are mated, but the difficulty sometimes arises that a ram will not serve a mountain ewe after having been mated with pure-bred ewes.

The management of the flock during the gestation period is usually simple. They run principally on grass, though some breeders put their ewes on to roots—chiefly swedes—which are eaten in breaks, *in situ.* With regard to this latter practice, divergent views are held as to its desirability. Its success is largely determined by the nature of the supplementary feeding allowed to the flock. The popular practice, however, is to withhold roots until after lambing, when they are fed on the pastures. Supplementary feeding in addition to the pasture is given, varying from 6 to 8 weeks prior to lambing. The quantities and kinds of foods fed vary considerably, according to the season, district and condition of the flock, but on the average an allowance of about ½ lb. concentrated food and up to 1 lb. of meadow hay per day is fed.

Lambing Time.—No extensive preparations are made for the lambing season in Wensleydale flocks, which commences about the end of February and the beginning of March. A sheltered field close to the homestead is the usual lambing site, though some breeders have equipped or converted ordinary buildings temporarily for the purpose of housing ewes likely to lamb over-night. The pasturage upon which the ewes and lambs are turned after lambing is usually fresh, in that it has been rested from carrying sheep for some time previous. Supplementary feeding is given to the ewes until the pasturage starts to give a plentiful bite of nutritious grass. This feeding consists of about 1 lb. concentrated food, ¾ to 1 lb. meadow hay and 9 to 12 lb. roots (swedes or mangolds) when available. The ewes are good nurses and push their lambs on very satisfactorily. Those lambs required for show and sale purposes are usually given additional feeding during the summer, the ewes receiving pasturage only. In large flocks ewes nursing twin lambs receive better treatment than those with single lambs.

The sheep are shorn during June, this being preceded by washing about 10 days previous, while the lambs are weaned towards the end of July and the beginning of August. The ram lambs required for breeding purposes are steadily pushed forward in condition, and are sold at the ram sales at the beginning of October. The ewe lambs depend chiefly upon pasture, and they winter on grass, supplemented in bad weather with hay and a small allowance of concentrates.

Tup and ewe hoggs required for exhibition purposes the following season are invariably wintered under cover in common with other breeds, being brought in from pasture about November. The hoggs are turned out for exercise and pasture every day, but otherwise are entirely house-fed. They are clipped the following April, and are turned out to pasture when the grass commences to grow—usually at the beginning or middle of May, depending upon the season.

In connection with the breeding of Wensleydales, a very interesting feature associated with the breed is that a proportion of black and silver-grey lambs are born every year, and this in spite of the fact that breeders have never bred from black sheep, at least since the breed became registered. Breeders, however, do not find this feature to detract from the breed, except perhaps in one respect, in that black ewe lambs have to be drafted to the butcher. The black ram lambs meet with a very ready sale for crossing purposes, and make equally as much money, and sometimes more, than the white ram lambs, while black ewe hoggs have frequently won fat-show prizes. It is interesting to note that the cross-bred progeny of the first generation from a black sire invariably carry white wool—even from Black-faced Mountain sheep. It is presumed that the black-carrying factor was introduced into the breed through the Leicester cross—Bakewell traditionally having used a black sheep. Even at the present day the English Leicesters throw black lambs, but in a smaller proportion than occurs in the Wensleydale breed; but with Leicester breeders this feature is supposed to indicate purity of breeding. From inquiries which the writer has made, the English Leicester gives up to about 16 per cent. of blacks in the best flocks, whereas the Wensleydale may throw up to about 20 per cent. black. Whether this property of breeding black lambs is due to breeders cultivating the deep blue colour is not exactly known, but that in part it may be associated with it is pointed from the fact that Border Leicester breeders who have aimed for white faces and ears white both inside and out, do not get black lambs in their flocks. Lincoln breeders, on the other hand, who favour a little colour occasionally, have black lambs born. Yet there are instances of typical Wensleydale rams within the writer's experience which have never sired a black lamb. Similarly the analysis of progeny records of ewes shows that some families over many generations only throw a small proportion of blacks compared with others. Having regard to these features there is reason to believe that if Wensleydale breeders could systematically test their rams and ewes, the black factor could be eliminated from the breed, just as the red colour has been eliminated from Aberdeen Angus herds. One or two breeders have gone to the length of establishing an all-black flock, these making ideal animals for park lands.

HENRY G. ROBINSON.

University College,
Reading.

EXPERIMENTS ON THE MANURING OF BEANS AND RED CLOVER.

A LARGE number of Field Experiments have been conducted in this country on the manuring of cereal crops, roots and potatoes. Experiments on the manuring of leguminous crops have been on the whole comparatively few. One reason for this is undoubtedly the fact that leguminous crops as a general rule must be grown in rotation. If they are grown year after year on the same land as may be done with wheat, barley or mangolds they are usually attacked by disease.

Of the importance of the leguminous crop in the rotation there can be no doubt. It serves to enrich the soil for future crops and without the nitrogen which it accumulates our fields would certainly be much less fertile.

BEANS.

In many parts of England small areas of beans are grown, but it is in the eastern districts where that crop assumes greatest importance.

Suffolk, in 1920, had the largest area of beans of any county in England, *viz.*, 35,550 acres. Lincolnshire was second with 28,479 acres and Essex third with 25,834 acres. Norfolk had 10,192 acres and no other county exceeded 10,000 acres.

Previous Experimental Work.

On November 1, 1889, Sir (then Dr.) J. H. Gilbert, M.A., F.R.S., delivered a lecture at the Royal Agricultural College, Cirencester,[1] on the results of experiments at Rothamsted on the growth of leguminous crops.

In these experiments beans were grown during the years 1847 to 1878, on the same land every year, with certain exceptions. It was found that independently of fluctuations, obviously due to season, there were frequent entire failures, which were more or less due to season, but were also dependent partly on the conditions induced in the land by continuous cropping with beans. Disregarding the results of the first year, when the unmanured plot gave a relatively high yield, there was generally a considerable increase of crop by the use of mineral manures containing potash, but comparatively little further increase by the addition of nitrogenous to the mineral manures.

Experiments upon the manuring of spring-sown beans were conducted by the Highland and Agricultural Society of Scotland, at Pumpherston, in Linlithgowshire, in the season 1884. The season was favourable and the bean crop good. The soil was of a clayey character and well suited to beans. The late Dr. Aitken in his report on the experiments[1] states that the ingredient in the manure which had the most powerful effect in increasing the quantity of the crop was potash, after that came lime and phosphoric acid. Nitrogenous manures (nitrate of soda, sulphate of ammonia, horn dust and dried blood) on the other hand were shown to be of very secondary importance, and it was found that when these were applied in great quantity or in such a form as to come into operation at a late period of the growing season they retarded the crop more or less seriously. None of the plots received farmyard manure. Undissolved and dissolved phosphates were tested, and it was found that the dissolved phosphates gave better results in every way than the others. Amongst the undissolved phosphates the bone meal gave the best results.

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[1] *Agricultural Students' Gazette.* New Series. Vol. IV. Parts V and VI.

Dr. Aitken also investigated the composition of the beans grown on the plots which had been manured in various ways and came to the conclusion that as far as the composition of the beans is concerned, it is a matter of no importance to a farmer what manurial treatment he gives his bean crop—the only thing he has to consider is the quantity of the crop.

Experiments were conducted under the auspices of the West of Scotland Agricultural College, on the manuring of the bean crop at a number of Centres in 1905 and 1906[2] by Professor (now Sir) R. Patrick Wright. The most profitable returns in the two years' experiments were obtained from the application of 6 cwt. superphosphate and 2 cwt. sulphate of potash per acre, applied with inoculated seed. The addition of nitrate of soda to superphosphate and sulphate of potash appeared to be of doubtful advantage. Sulphate of potash proved more satisfactory than kainit or potash manure salts as a source of potash. The results obtained in 1906 did not encourage the belief that a profitable return can usually be obtained from farmyard manure as a manure for beans.

Trials were conducted at Cockle Park, Northumberland, on the manuring of beans in 1906, 1907 and 1910.[3] In these trials basic slag gave better results than superphosphate. It was also found that muriate of potash, when added to slag, on the average increased the grain by 7 bushels and when dung was also added by over 6 bushels. Lime mud added to superphosphate also considerably increased the crop.

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[1] *Transactions of the Highland and Agricultural Society of Scotland*, 1885 and 1886.

[2] Bulletin No. 42, West of Scotland Agricultural College, 1907.

[3] *Cockle Park Guide*, 1913. Professor D. A. Gilchrist.

The following manures per acre gave good results with beans :—

(1) 10 tons dung, 6 cwt. basic slag and 1 cwt. muriate of potash.

(2) 6 cwt. basic slag and 1 cwt. muriate of potash.

The trials showed that beans should be harvested while still green, and when the beans in the pod become black at the hilum.

At the Woburn Experimental Station of the Royal Agricultural Society of England certain experiments have been carried out on the manuring of beans and clover. It was found that the application of magnesia to both these crops retarded growth and resulted in a smaller weight of produce being obtained.[1]

Suffolk Experiments.

In the year 1900 rotation experiments were commenced by the East Suffolk County Council, near Saxmundham, and they have been continued ever since.

The soil at the experimental station is a poor boulder clay containing small nodules of chalk. It is, however, quite suitable land upon which to grow beans and clover. Both these crops are usually successful and "winter," *i.e.*, autumn-sown, beans generally produce a greater weight of corn per acre than either wheat or barley. On the whole the soil may be regarded as typical wheat and bean land, naturally poor, but responsive to generous treatment in the matter of manure.

The experimental field in which these experiments were conducted is divided into two parts. The same rotation of crops is grown on each part, but the manurial treatment differs. The lower part of the field is devoted to Rotation I, and is divided into four sections which may be regarded as four small fields. The experiments of Rotation II are conducted on the upper part of the field, which is also divided into four sections.

The cropping of 1921 is given on each section.

Each section is divided into ten plots.

The cropping was as follows :—

Section A :—	Section B :—
1918—Beans	1918—Wheat
1919—Wheat	1919—Roots
1920—Roots	1920—Barley
1921—Barley	1921—Clover

and so on with the other sections.

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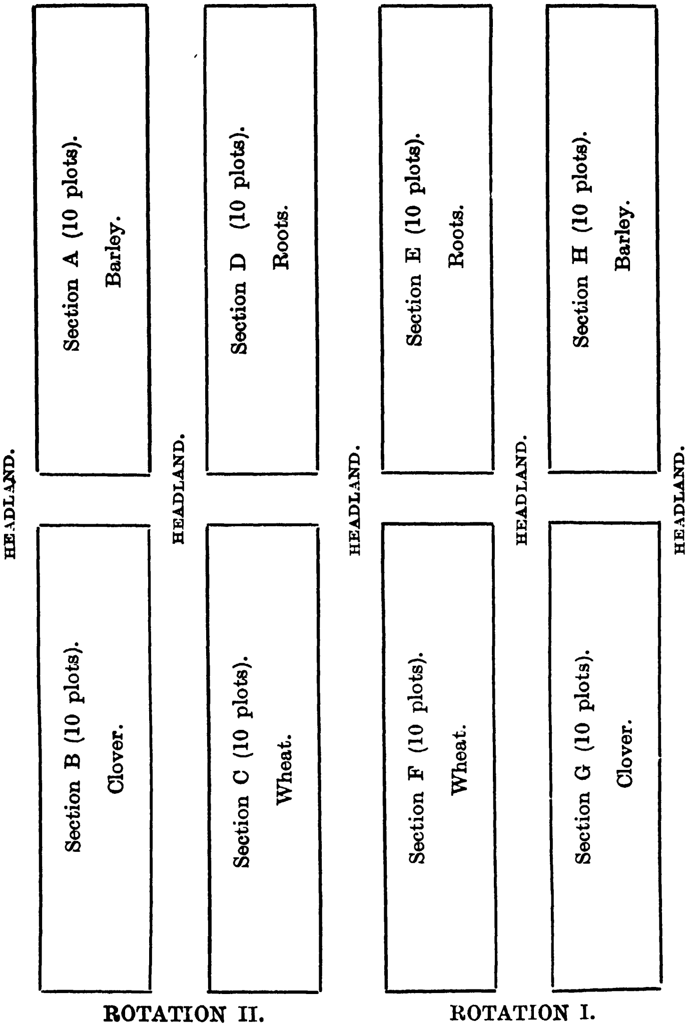
[1] *Journal of the Royal Agricultural Society of England*, Vol. 71. 1910. Dr. J. A. Voelcker.

Diagrammatic Plan of Saxmundham Rotation Experiments Showing Cropping in 1921.



Each of the sections is cropped every year with one of the four crops of the four-course rotation, *i.e.* :—

(*a*) Roots—usually mangolds.
(*b*) Barley.
(*c*) Beans or clover (leguminous crop).
(*d*) Wheat.

By this arrangement we have experiments on all four crops every year, so that since the experiment started the results of twenty-one years with either beans or clover are available.

Winter beans were grown most frequently, in fact for fifteen years out of the twenty-one. In one year, 1901, the clover crop was patchy and so the weights were not recorded. Beans or clover always occupied their allotted place in the rotation—after barley.

During the years 1909—18 inclusive, beans were grown every year. With the exception of 1917 these years were all normal and fair crops were obtained, so that it is thought best to take them as typical. In 1917 the beans were a very poor crop, owing to severe frost in March and early April, followed by insect attack.

In the first series of experiments, known as Rotation I, the plan was adopted of applying the same manure annually to each plot, irrespective of the crop. It is not suggested that this is a desirable method to adopt in ordinary farming, but it affords excellent opportunities of ascertaining what are the actual manurial requirements of the crops grown. When crops are grown in rotation it is possible to investigate the manuring of crops such as clover and beans, which cannot be satisfactorily grown on the same land year after year.

Effect of Farmyard Manure.

If we turn to Table I B, and Diagram I we find that Plot 1 receives 6 tons of farmyard manure annually, whilst the other plots have never received any of that manure since the commencement of the experiment in 1899.

Plot 1 has given the highest yield of any plot, with, over the average of ten years, 38·3 bushels of grain and 31·8 cwt. of straw as compared with 19·6 bushels of grain and 14·6 cwt. of straw on the no manure plot. Unfortunately there are very few farms on which this quantity of farmyard manure, 24 tons in the rotation, can be supplied. Judging from the effect of nitrogenous manure on the other plots, it would appear that the beneficial effect of farmyard manure upon beans is due rather to its general effect upon the fertility of the soil, than to the nitrogen it contains. Of the mineral substances present in farmyard manure no doubt the phosphates and potash play an important part in helping the bean crop.

It is worthy of note that the soil of this plot is now, after twenty years' application of farmyard manure, quite noticeably darker in colour and superior in texture to that of the adjacent plots which have not received any farmyard manure for twenty years. This difference in colour and texture is undoubtedly due to the residue of organic matter left by the farmyard manure

TABLE I B.—*Rotation* I. *Winter Beans*

	Annual Manuring of each Plot		1909	1910	1911	1912	1913	1914	1915	1916 (Filled up with peas in Spring)	1917 (Very severe winter)	1918	Average for 10 years 1909–18
1	6 tons Farmyard Manure	Corn, Bush.	40·0	40·5	39·0	49·5	21·6	45·0	48·8	35·5	9·5	53·7	38·3
		Straw, cwt.	35·0	41·0	22·0	32·0	36·9	29·3	46·4	35·0	6·9	34·0	31·8
2	4 cwt. Bone Meal . .	Corn, bush.	31·0	33·0	32·0	40·0	16·5	36·2	26·6	27·3	5·4	31·5	27·9
		Straw, cwt.	29·0	29·0	17·0	24·0	22·6	22·5	35·3	36·8	4·1	21·0	24·1
3	2 cwt. Nitrate of Soda	Corn, bush.	17·0	22·0	26·0	31·0	12·7	27·3	19·3	28·5	4·8	22·7	21·1
		Straw, cwt.	19·0	18·0	13·5	19·0	16·6	15·3	23·2	27·3	2·8	14·0	16·8
4	2 cwt. Super. 30% . .	Corn, bush.	33·0	35·5	35·0	43·0	16·6	41·0	26·6	36·5	7·0	36·0	31·0
		Straw, cwt.	34·0	26·5	19·5	27·0	21·0	26·5	31·2	33·0	5·5	23·0	24·7
5	1 cwt. Muriate of Potash	Corn, bush.	19·0	21·5	25·0	26·5	10·5	27·6	19·0	26·6	4·4	19·1	19·9
		Straw, cwt.	18·0	16·5	13·5	19·0	10·5	17·6	22·3	22·5	3·4	14·0	15·7
6	No Manure	Corn, bush.	19·0	22·0	23·0	30·0	8·2	24·1	20·0	25·1	4·4	21·0	19·6
		Straw, cwt.	17·0	17·0	12·0	16·0	12·1	14·1	22·6	20·0	3·7	12·0	14·6
7	2 cwt. Super. 30%	Corn, bush.	35·0	35·5	36·5	46·5	21·6	43·5	42·5	37·7	8·6	40·0	34·7
	1 cwt. Muriate of Potash	Straw, cwt.	32·0	25·0	20·0	26·0	21·2	24·5	42·3	33·7	5·9	22·0	25·2
8	2 cwt. Nitrate of Soda	Corn, bush.	21·0	23·0	24·5	30·5	16·2	29·2	22·2	26·6	6·0	19·5	21·8
	1 cwt. Muriate of Potash	Straw, cwt.	15·0	20·0	14·5	19·0	18·7	17·7	25·0	25·3	4·1	12·0	17·1
9	2 cwt. Nitrate of Soda	Corn, bush.	34·0	30·0	34·0	41·0	21·8	41·0	28·8	35·2	6·0	22·7	29·4
	2 cwt. Super. 30%	Straw, cwt.	35·0	31·0	18·0	26·0	30·1	28·6	35·0	38·0	7·7	23·0	27·2
10	2 cwt. Nitrate of Soda	Corn, bush.	39·0	36·0	35·5	49·0	22·6	47·6	48·5	33·3	9·9	41·3	35·9
	2 cwt. Super. 30%	Straw, cwt.	38·0	34·0	19·5	30·0	29·0	30·6	45·0	39·0	7·0	28·0	30·0
	1 cwt. Muriate of Potash												

and it seems probable that this residue is of considerable benefit to the beans. It is also possible that the micro-organisms present in the farmyard manure help the growth of beans in some way not understood.

The experiments described here show that artificial fertilisers containing nitrogen have very little influence upon leguminous crops. Farmyard manure is usually regarded as largely valuable for its nitrogen, but it is evident that its other constituents must have a great influence upon beans and clover.

Effect of Nitrogen.

Only one form of active nitrogenous manure—nitrate of soda—is included in the experiments. It appears probable that the other highly available nitrogenous manures would give somewhat similar results. The beneficial results of the application of nitrate of soda either alone or in combination with phosphates and potash have been extremely small. Plot 3 receiving nitrate of soda alone is only 1½ bushels per acre better than "No Manure," whilst Plot 9, receiving nitrate of soda and super. together, gave actually a smaller yield of beans than super. only, although there was more straw. Plot 10 receiving nitrate, super. and potash gave only about one bushel per acre more beans than Plot 7, which received super. and potash but no nitrate.

Effect of Phosphates.

Phosphates as a manure for beans have had a most beneficial effect. An annual application of 2 cwt. of superphosphate with no other manure at any time in the rotation has increased the crop from an average of 19·6 bushels on the No Manure plot to 31 bushels on the super. plot, with a corresponding increase in straw. The addition of 2 cwt. of super. to 1 cwt. of muriate of potash has increased the crop from 19·9 bushels with muriate of potash alone to 34·7 bushels with the two manures together.

Bone meal, containing phosphates in a relatively insoluble form, has given much poorer results than 2 cwt. of super., although the 4 cwt. per acre applied contains more than twice the quantity of phosphates in the 2 cwt. of super. and some nitrogen in addition.

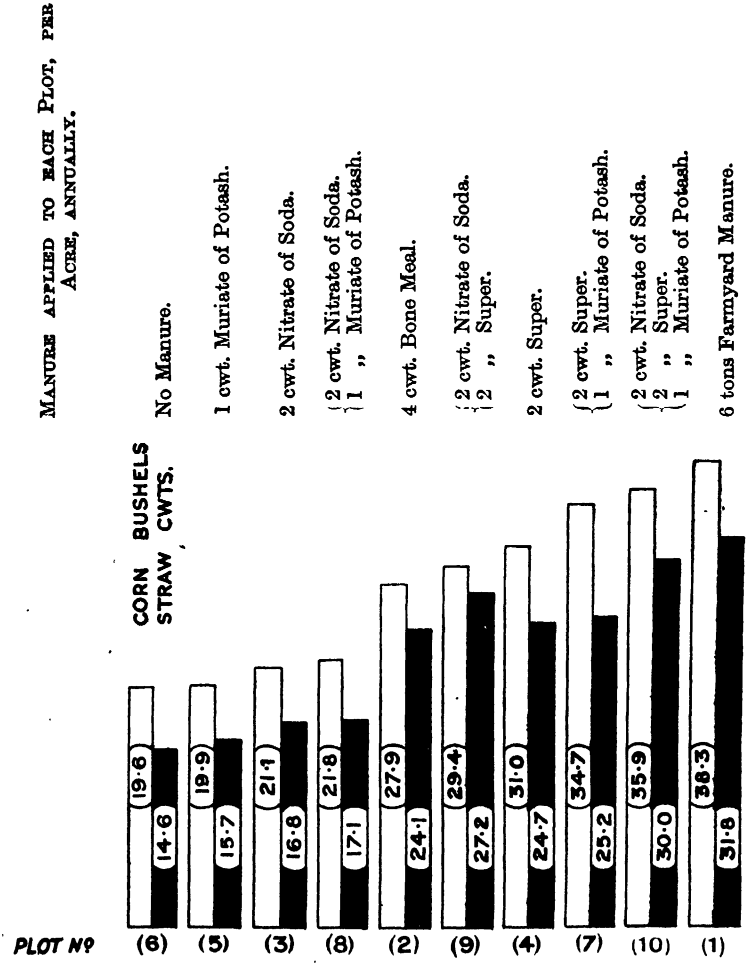
It would appear from this that under the climatic and soil conditions prevailing at Saxmundham the high solubility of the phosphates in superphosphate gives that manure a considerable advantage over the less soluble phosphates present in bones, and that on such a soil high solubility is a factor of great importance in the relative efficiency of phosphatic dressings to beans.

Basic slag was not included in these trials.

Effect of Potash.

In the absence of phosphates, muriate of potash, either alone or in conjunction with nitrate of soda, has proved practically useless. As an addition to a manure containing phosphates it has had a decided effect in increasing the crop. Thus, whilst

DIAGRAM I.



Winter Bean Manurial Experiments at Saxmundham, showing the average yield per acre for ten years, 1909–1918.
Corn in Bushels (White). Straw in Cwts. (Black).

super. alone gave an average of 31 bushels of beans per acre, the addition of muriate of potash increased the crop to 34·7 bushels.

The addition of 1 cwt. of muriate of potash to a dressing of nitrate of soda and super. has also had a marked effect, the crop being increased from 29·4 bushels without the potash to 35·9 bushels with it.

Financial Results.

Farmyard manure is a home product of which it is very difficult to ascertain the composition or the cost to the farmer.

It is interesting, however, to find out what is the value of the increased crop resulting from its application.

Six tons of farmyard manure have given an average increase of crop of 18·7 bushels, as compared with no manure. Taking the pre-war price of 4*s*. per bushel for the beans and neglecting the value of the straw, we find that each ton of farmyard manure gave an increased yield of bean grain worth about 12*s*.

It is quite evident that under very few circumstances is it likely that the application of nitrate of soda to beans will prove profitable.

Phosphates on the other hand have proved very profitable. A dressing of 2 cwt. superphosphate has increased the crop by about 11 bushels, worth at pre-war prices 44*s*., at an expenditure of 6*s*. Very profitable results have also been obtained by the addition of superphosphate to other manures.

Muriate of potash used alone or in the absence of phosphates has not proved profitable. When used as an addition to manures containing phosphates it has resulted in substantial increases of from 3·7 to 6·5 bushels of beans. These, taking either pre- or post-war prices for manures and grain, would result in very fair profits even when the value of the straw is ignored.

In manuring beans, however, the straw is well worth consideration, as the larger the crop of straw the more nitrogen is collected from the air, and the larger and richer the manure heap in future years.

In the same field at Saxmundham as that in which Rotation I is carried out is another series of plots known as Rotation II.

In this rotation farmyard manure and artificials are applied to the various crops in the rotation in such a way that the manurial treatment resembles that under ordinary farming conditions.

Table II B gives the manurial treatment and the average crops of beans obtained from the various plots. The same years (1909–18) as in Rotation I have been selected and the average yield taken.

Table II B.—*Rotation II.* *Winter Beans*

Plot No.	Wheat 1st Year of Rotation	Roots 2nd Year of Rotation	Barley 3rd Year of Rotation	Beans or Clover 4th Year of Rotation		1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	Average for 10 years 1909–18
1	No Manure to any Crop	Nil	Nil	Nil	Corn, bush.	19·0	23·0	21·0	30·5	17·7	25·4	22·2	26·3	8·6	18·2	21·2
					Straw, cwt.	18·0	24·0	11·0	19·0	24·9	18·7	25·5	23·0	5·9	21·0	19·1
2	10 tons Farmyard Manure	Nil	Nil	Nil	Corn, bush.	23·0	32·5	27·0	38·0	22·5	32·7	30·1	32·1	9·9	30·2	27·8
					Straw, cwt.	22·0	27·0	13·5	21·0	25·5	23·5	27·3	28·0	6·4	23·0	21·7
3	10 tons Farmyard Manure	1 cwt. Nitrate of Soda 5 cwt. Super.	Nil	Nil	Corn, bush.	31·0	35·5	36·0	46·0	24·1	36·5	35·5	37·4	8·3	40·0	33·0
					Straw, cwt.	32·0	29·5	18·0	29·0	29·1	28·6	36·0	37·5	6·2	25·0	27·1
4	1 cwt. Nitrate of Soda 5 cwt. Super.	10 tons Farmyard Manure	Nil	Nil	Corn, bush.	33·0	38·0	41·5	50·0	28·5	42·2	38·4	37·7	9·5	40·1	35·8
					Straw, cwt.	33·0	29·0	19·0	26·0	29·8	29·6	32·3	35·0	7·8	27·0	26·8
5	1 cwt. Nitrate of Soda	10 tons Farmyard Manure	Nil	5 cwt. Super.	Corn, bush.	32·0	37·5	39·0	47·0	27·3	38·4	42·5	37·7	10·1	37·0	34·8
					Straw, cwt.	32·0	29·5	20·0	25·0	28·7	25·7	37·6	35·9	8·2	27·0	26·9
6	10 tons Farmyard Manure 1 cwt. Nitrate of Soda	5 cwt. Super.	Nil	Nil	Corn, bush.	35·0	41·0	36·5	48·0	29·2	38·7	39·3	37·7	11·1	41·3	35·7
					Straw, cwt.	32·0	30·5	20·0	28·0	29·0	26·6	35·3	35·9	7·8	24·0	26·9
7	10 tons Farmyard Manure	5 cwt. Super.	1 cwt. Nitrate of Soda	Nil	Corn, bush.	34·0	40·0	39·0	50·0	29·2	37·5	40·7	36·8	9·2	37·3	35·3
					Straw, bush.	32·0	28·5	16·5	27·0	30·8	26·7	34·6	36·4	9·0	28·0	26·9
8	10 tons Farmyard Manure	1 cwt. Nitrate of Soda 5 cwt. Super.	2½ cwt. Super.	2½ cwt. Super.	Corn, bush.	39·0	37·0	38·5	51·0	30·5	36·8	40·7	37·4	9·9	39·1	36·0
					Straw, cwt.	39·0	31·0	18·5	30·0	38·4	26·9	38·0	37·1	9·0	30·0	29·7
9	10 tons Farmyard Manure 1 cwt. Nitrate of Soda	1 cwt. Nitrate of Soda 5 cwt. Super.	1 cwt. Nitrate of Soda	Nil	Corn, bush.	34·0	38·0	33·0	47·0	27·0	40·6	38·4	34·3	12·7	42·6	34·7
					Straw, cwt.	37·0	31·0	19·0	27·5	28·0	28·3	34·8	29·6	8·4	28·0	27·1
10	1 cwt. Nitrate of Soda	1 cwt. Nitrate of Soda 5 cwt. Super.	1 cwt. Nitrate of Soda	10 tons Farmyard Manure	Corn, bush.	39·0	42·0	37·0	53·0	16·3	51·4	51·7	38·1	13·3	59·5	40·1
					Straw, cwt.	38·0	32·5	21·5	30·5	22·4	34·6	41·9	33·7	8·4	33·0	29·6

This experiment gives a good deal of further information upon the manurial requirements of beans. Comparing the yields obtained on Plots 1 and 2 we see that the farmyard manure applied to Plot 2 three years previously has had a considerable influence upon the beans, especially upon the quantity of grain produced, the crop being increased by 6·6 bushels per acre.

Comparing Plots 2 and 3 we find that the artificial manures (1 cwt. of nitrate of soda and 5 cwt. super.) applied to the roots two years previously on the latter plot have also considerably increased the yield of beans, both straw and corn—from 27·8 bushels of corn and 21·7 cwt. of straw, to 33 bushels of corn and 27·1 cwt. of straw.

Plot 4, on which the farmyard manure is applied a year nearer to the beans—to the roots—has given a better result in corn. Plot 8, receiving a double dressing of superphosphate, in the rotation has given more straw but very little more corn than have Plots 3–7

Plot 10, on which the farmyard manure is applied directly to the beans, has given the heaviest yield of corn.

Generally speaking this experiment confirms the results of that of Rotation I, in showing that farmyard manure has a great influence upon the bean crop. It is evident also that artificials have a decided influence, even when applied two or three years previously.

Judging from Rotation I, we are justified in concluding that it is the phosphates in the nitrate-super. combination which are responsible for the increased yield. It is, however, quite possible that nitrate of soda applied to previous crops such as wheat, barley or roots, by increasing the amount of stubble, leaf or root residue left by those crops, and so increasing the amount of vegetable matter in the soil, may indirectly benefit the bean crop. There is very good reason to believe that beans much appreciate the presence of a fair supply of decaying vegetable matter in the soil.

The effect of the application of manures containing phosphates, or phosphates and potash, together with a dressing of farmyard manure, direct to the beans, has not been investigated in these rotation experiments.

Other Experiments.

In addition to the experiments at Saxmundham, manurial experiments with beans have been conducted on several farms in East Suffolk under ordinary conditions of arable farming.

In these experiments, on heavy land containing chalk nodules, good results have been given by superphosphate and basic slag, alone or in conjunction with a potash manure, and by superphosphate or basic slag with farmyard manure.

General Conclusions.

The experiments in East Suffolk have all been conducted on soil containing a sufficient supply of lime. There can be no doubt, however, that where that substance is not present in sufficient quantity it is necessary to apply a good dressing before satisfactory crops of beans can be obtained.

Assuming the presence of a sufficient supply of lime, it would appear from the results of the experiments given above that farmyard manure gives excellent results as a manure for beans, and when it can possibly be spared it is probably sound practice to apply it to them. There is also evidence that where only a moderate dressing of farmyard manure is available the additional application of a phosphatic manure, such as superphosphates or basic slag, is desirable. For ordinary heavy land the following dressing may be suggested per acre :—

10 tons of farmyard manure and
3 to 4 cwt. 30 per cent. super.;

or

10 tons of farmyard manure and
5 to 7 cwt. 20 per cent. basic slag (or its equivalent of other qualities of basic slag).

In the absence of farmyard manure the following applications may be used with confidence on heavy land :—

4 cwt. of 30 per cent. super. and
1 cwt. muriate of potash or its equivalent of other potash manure;

or

7 to 10 cwt. of 20 per cent. basic slag or its equivalent of other qualities..
1 cwt. muriate of potash or its equivalent of other potash manures.

RED CLOVER (*Trifolium Pratense*).

Clover is a crop of great importance throughout practically the whole of Great Britain and Ireland. In the East and South of England it is often grown alone as pure red clover. In other districts it is usually mixed with rotation grasses such as rye grass, forming a crop known as "Seeds." Clover, probably to an even greater extent than beans, serves to accumulate nitrogen for succeeding crops.

The total area of clover and rotation grasses mown for hay in England is very large—roughly 1½ million acres. The importance of the clover crop is therefore very evident.

Owing no doubt to the fact that clover cannot be grown year after year on the same land, the number of experiments on the manuring of that crop has been very limited. Sir (then Dr.) J. H. Gilbert, M.A., in his lecture at Cirencester in 1889, previously mentioned,[1] referred to experiments which had been conducted at Rothamsted with red clover. In this case the period of experiment was twenty-nine years from 1849 to 1877 inclusive. Red clover was sown fifteen times in this period, but in only seven of the twenty-nine years was any clover obtained. The attempt to grow clover year after year on ordinary arable land, by means of such mineral manures as increase the luxuriance of growth when there is a fair plant, or even by the addition to these of nitrogenous manures, entirely failed.

More recent experiments with red clover at Rothamsted and elsewhere are referred to by Sir John Russell.[2] In these later experiments clover was planted in a field which had not grown that crop for more than fourteen years. Various manures had been applied to previous crops to test their residual effects. The clover crop was harvested in 1917. None of the manures except farmyard manure had any marked effect in increasing the crop. Rape cake, guano and shoddy seemed to have no effect at all, even when applied to the preceding wheat crop. Superphosphate, bone meal and basic slag may have had a small effect, but nothing very definite. Farmyard manure had a striking effect, which was not exhausted after a single season, dressings applied two, three or four years beforehand producing notable increases of crop. The heavy crop of clover in 1917 on the farmyard manure plot was followed by a much heavier wheat crop on this plot than on the other plots in 1918.

Russell, in the same article, refers to an experiment conducted in Essex in 1914, in which, however, farmyard manure gave practically no increase in crop ; the only effective fertiliser when applied alone was basic slag. Clover has also been grown in rotation experiments at Rothamsted [3] on Agdele field and very good results have been obtained by the use of mineral manures.

Red Clover Manurial Experiments at Saxmundham.

Red clover has been grown on the rotation plots at Saxmundham five times since 1900, the crop being harvested in the years 1902, 1903, 1904, 1919 and 1921, *i.e.*, the years in which beans were not grown. In all cases the clover was sown in barley as a nurse crop in the usual way.

The manuring was the same as for the beans, and the average

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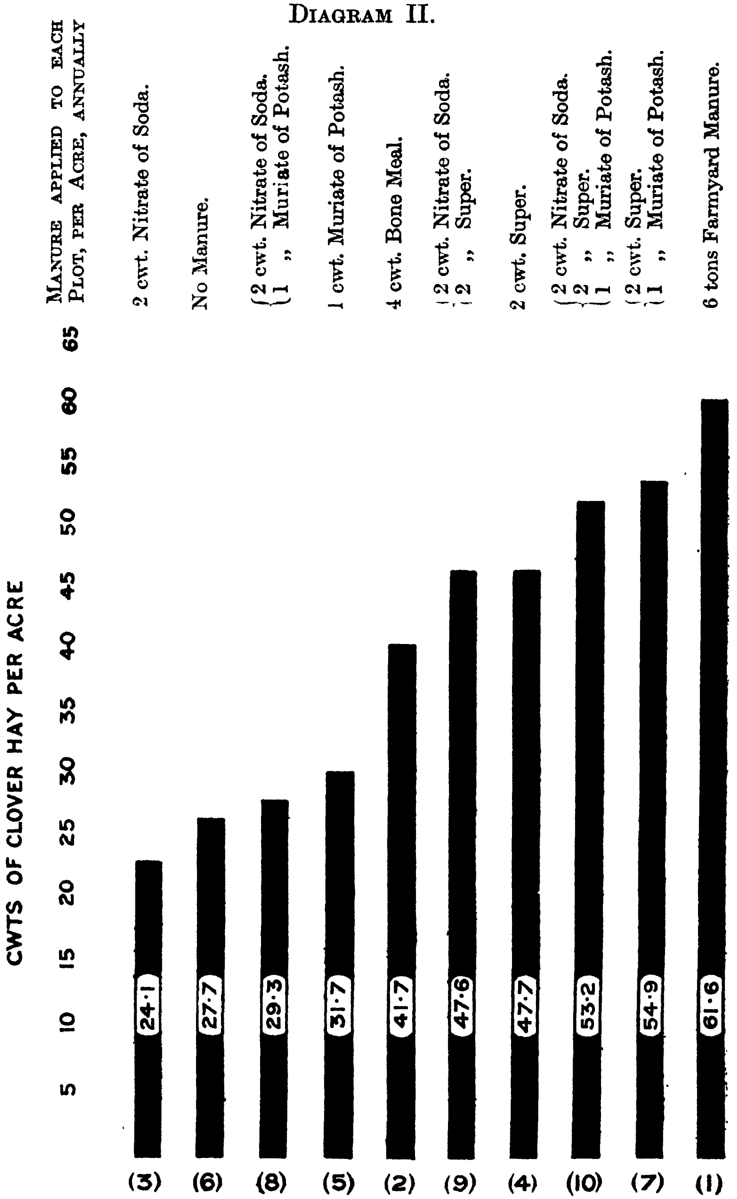
[1] *Agricultural Students' Gazette*, New Series, Parts IV and V.

[2] *The Influence of Farmyard Manure on the Clover Crop* (*Journal of the Ministry of Agriculture*, May, 1919, p. 124).

[3] *Report on Rothamsted Experiments*, 1918–20. Dr. E. J. Russell, F.R.S.

DIAGRAM II.



Red Clover Manurial Experiment at Saxmundham, showing the average yield per acre of Clover Hay in cwts. for five years, i.e. 1902, 1903, 1904, 1919 and 1921.

results of the five years for Rotation I are given in Table I C and Diagram II.

The figures of the first three years are of interest in that the experiments had then only been started a short time—the first harvest was reaped in 1900. Consequently the manures had not then had time to so greatly influence the soil. On the other hand the two more recent years, 1919 and 1921, show greater differences of crop, owing no doubt to the great influence of the manures applied continuously on the same land every year.

Uniform plants of clover were obtained on all plots except in the year 1919 on Plots 9 (nitrate of soda and super.) and 10 (nitrate of soda, super. and muriate of potash), when the plant was somewhat irregular on these plots.

TABLE I C.—*Saxmundham Experiments on the Manuring of Clover.*

WEIGHT OF CLOVER HAY IN CWTS. PER ACRE IN THE YEARS MENTIONED.

Plot	Manure applied annually since 1899	1902	1903	1904	1919	1921	Average of the five years
1	6 tons Farmyard Manure	46·0	54·0	52·3	79·6	76·0	61·6
2	4 cwt. Bone Meal . . .	36·7	33·0	37·3	52·4	49	41·7
3	2 cwt. Nitrate of Soda .	28·2	21·0	32·3	19·2	19·8	24·1
4	2 cwt. Super.	32·5	48·0	47·1	62·2	49	47·7
5	1 cwt. Muriate of Potash	29·2	23·0	36·2	33·4	37	31·7
6	No manure	29·0	22·0	32·1	24·5	31	27·7
7	2 cwt. Super. 1 cwt. Muriate of Potash	37·2	48·0	53·2	73·0	63	54·9
8	2 cwt. Nitrate of Soda 1 cwt. Muriate of Potash	31·5	25·0	32·2	25·4	32·5	29·3
9	2 cwt. Nitrate of Soda 2 cwt. Super.	36·0	47·0	52·3	41·7[1]	61	47·6
10	2 cwt. Nitrate of Soda 2 cwt. Super. 1 cwt. Muriate of Potash	40·7	51·0	55·2	53·0[1]	66 A very dry year.	53·2

[1] An irregular Plant of Clover.

The barley grown on these plots in 1918 was rather heavier than on the other plots and may have had a smothering effect on the young clover plants.

Effect of Farmyard Manure.

Examining the results in detail, and taking average figures, we find that the annual dressing of 6 tons of farmyard manure has given the heaviest yield, as was also the case with beans.

In the autumn of 1921 (a very dry season) it was found that a much worse plant of clover was obtained on the farmyard manure plots than on several of the other plots. This was probably due partly to the smothering action of the heavy crop of barley obtained on this plot in 1921, and possibly also to the drying up effect of a heavy crop of corn upon the land.

The effect of farmyard manure upon clover raises a number of interesting problems, and it is proposed to consider these further when discussing the other experiments on clover at Saxmundham, *i.e.*, those of Rotation II.

Effect of Nitrate of Soda.

The annual application of 2 cwt. of nitrate of soda has reduced the yield of clover below that of the No Manure plot. It is interesting to note that the clover plant obtained on this plot is as satisfactory as on the other plots or nearly so, but that the crop fails to grow more than a few inches high. This is also the case on the No Manure plot, which has now received no manure of any kind for twenty years, and on the other plots which give an inferior yield.

The depressing effect of nitrate of soda on the yield of other plots is also most noteworthy. Thus nitrate of soda added to muriate of potash has given a smaller yield than muriate of potash only. Nitrate of soda added to superphosphate has not in any way increased the yield as compared with superphosphate only, whilst nitrate of soda added to super. and muriate used in combination as on Plot 10 gives a slightly smaller yield than super. and muriate used together on Plot 7 without the nitrate of soda.

These latter two cases may be partly due to the depressing effect of the slightly irregular plant of clover on these plots in 1919. There can be very little doubt that the application of a heavy dressing of nitrogenous manure to the barley or other cereal in which the clover is sown diminishes the chance of obtaining a regular plant of clover, partly by the increased smothering action of the cereal crop, and partly, possibly, by a directly harmful effect of the nitrogenous manure on the clover. In a very dry season, such as 1921, the question of moisture supply was an important factor in obtaining a plant of clover, and in the autumn of 1921 it was found that whilst fair plants of clover were obtained on most of these plots the plant was very poor on Plot (1) (as already mentioned) and Plots 9 and 10. On all these plots heavy crops of barley were obtained in 1921, consequently there was the maximum smothering effect. In addition to this the heavy crop of barley would remove more moisture from the soil, so that less would be available for the small clover plants. In the autumn of 1921 it was also very interesting to observe that a much better plant of clover had been obtained in the furrows and paths between these plots, where there was no barley growing, than on the land actually growing barley.

Effect of Phosphates.

The effect of the application of phosphates, either in the form of superphosphate or bone meal, has proved most beneficial. An annual application of 2 cwt. of superphosphate has increased the average crop from 27·7 cwt. of clover hay with no manure to 47·7 cwt. with super.

Four cwt. of bone meal per acre has not given such a heavy yield as 2 cwt. of super. containing water-soluble phosphate—a similar result to that obtained with the beans, thus confirming the superiority of highly soluble phosphate on the Saxmundham soil.

When the figures of all the plots are examined it will be seen that no plot has given a satisfactory yield unless it has received either farmyard manure or phosphates.

Effect of Potash.

One cwt. of muriate of potash has given an increase of crop, whether used alone or as an addition to other manures. The increase was on an average 4 cwt. per acre when used alone, as compared with no manure. When added to superphosphate it increased the average crop by 7·2 cwt.; when added to nitrate of soda and super. by 5·6 cwt., and when added to nitrate of soda by 5·2 cwt.

Financial Aspects.

In these experiments an annual dressing of 6 tons of farmyard manure has increased the average crop of clover hay from 27·7 cwt. to 61·6 cwt. per acre. This, at the pre-war price of 3*s.* per cwt. for clover hay, would represent a return of nearly 17*s.* per ton of farmyard manure applied—an even better result than was obtained with beans.

It is extremely unlikely that the application of nitrate of soda to clover, either alone or in combination with other manures, will prove profitable. Probably similar results would be obtained with other active nitrogenous manures.

Phosphates, as in the case of beans, have proved extremely profitable. Two cwt. of superphosphate, costing in pre-war days 6*s.*, has given an average increase of 1 ton of clover hay per acre—worth say £3, at pre-war price.

In the case of potash the profit obtainable is not so certain on this heavy clay land, but the 5 or 6 cwt. of extra clover hay obtained would usually rather more than pay for the 1 cwt. of muriate of potash used.

On lighter land the case might be very different and potash might prove very profitable. This has proved to be the case in East Suffolk on several light land farms—The Firs Farm, Blaxhall, The Walnut Tree Farm, Chelmondiston, and others—where the application of potash has resulted in a greatly increased proportion of clover in a " seeds " mixture and a much larger crop.

The manures applied to the various plots in Rotation II Experiment are given in Table II C, on page 128, the manures being exactly the same as those applied to the beans from 1909–18.

As in the case of the beans, the farmyard manure applied to the wheat more than three years before harvesting the clover has had a considerable influence upon that crop, increasing the average yield by nearly 6 cwt. per acre of clover hay. In the two recent years this increase is much more marked. The artificials applied to Plot 3, on the roots two years before the growing season of the clover, have increased the average crop by nearly 13 cwt. per acre. Judging from the effect of superphosphate in the experiments of Rotation I it seems reasonable to conclude that this result is mainly due to the residual effects of the 5 cwt. per acre of super. applied to the roots. Plot 4, which receives its farmyard manure a year nearer to the clover than Plot 3, usually gives a slightly heavier crop of clover. Plot 5, which receives the 5 cwt. dressing of super. in the rotation, applied direct to the clover, gives a heavier yield of clover on an average. Plot 8, receiving 10 cwt. of super. per acre during the rotation, instead of 5 cwt., as is the case with Plots 3 to 7, gives a distinctly heavier yield of clover, thus again showing the great effect of phosphates. This was especially the case in 1919—a year of luxuriant growth. Plot 9, receiving 3 cwt. of nitrate of soda in the rotation, has not on an average given a heavier yield than Plots 3 to 7, which received only 1 cwt. of that manure. In 1921, however, an extremely dry year, it gave the heaviest yield of any plot. This was almost entirely due to the fact that it gave a much heavier second crop of clover than any other plot—13½ cwt. as compared with 9 cwt. on Plot 10, and 4 to 6 cwt. on the other plots. Plot 10, with farmyard manure applied direct to the clover, and also with 3 cwt. of nitrate of soda in the rotation, gave on an average a decidedly heavier crop of clover than Plot 9, where the farmyard manure was applied to the wheat three years previously.

It is worthy of note that whilst this plot gives decidedly the heaviest yield of beans, on an average, of any of the ten plots, with clover it does not give quite such a good yield as Plot 8, receiving more superphosphate and less nitrate of soda in the rotation, but the farmyard manure applied three years previously.

TABLE II C.—*Rotation* II. *Clover.*

Plot No.	Wheat 1st year of Rotation	Roots 2nd Year	Barley 3rd Year	Beans or Clover 4th Year	1902 cwt.	1903 cwt.	1904 cwt.	1919 cwt.	1921 cwt.	Average of the 5 years of Clover Hay per acre cwt.
1	No Manure to any crop	Nil	Nil	Nil	35·7	32·0	29·0	38·0	27·5	32·4
2	10 tons Farmyard Manure	Nil	Nil	Nil	29·7	26·0	35·0	53·1	47·5	38·2
3	10 tons Farmyard Manure	1 cwt. Nitrate of Soda 5 cwt. Super.	Nil	Nil	35·0	45·0	44·0	67·8	63·5	51·0
4	1 cwt. Nitrate of Soda 5 cwt. Super.	10 tons Farmyard Manure	Nil	Nil	34·0	53·0	47·0	72·4	62·0	53·7
5	1 cwt. Nitrate of Soda	10 tons Farmyard Manure	Nil	5 cwt. Super.	38·5	53·0	53·0	70·8	66·0	56·2
6	10 tons Farmyard Manure 1 cwt. Nitrate of Soda	5 cwt. Super.	Nil	Nil	35·2	47·0	47·0	64·2	65·0	51·7
7	10 tons Farmyard Manure	5 cwt. Super.	1 cwt. Nitrate of Soda	Nil	34·5	49·0	50·0	62·7	66·6	52·5
8	10 tons Farmyard Manure	1 cwt. Nitrate of Soda 5 cwt. Super.	2½ cwt. Super.	2½ cwt. Super.	35·7	61·0	54·0	85·2	67·5	60·7
9	10 tons Farmyard Manure 1 cwt. Nitrate of of Soda	1 cwt. Nitrate of Soda 5 cwt. Super.	1 cwt. Nitrate of Soda	Nil	34·2	51·0	46·0	57·1	75·5	52·7
10	1 cwt. Nitrate of Soda	1 cwt. Nitrate of Soda 5 cwt. Super.	1 cwt. Nitrate of Soda	10 tons Farmyard Manure	48·0	63·0	52·0	68·0	69·0	60·0

Experiment to test the effect of Phosphatic and Potassic Manures upon Clover and the succeeding crops.

In the spring of 1913 red clover was sown in barley, after mangolds, on a piece of land at Saxmundham, which had not grown clover for some years. A uniform plant was obtained, and during the winter of 1913–14 plots were laid out and manures applied as given in Table III C.

TABLE III C.

Plot	Manurial Treatment, Winter, 1913–14	1914 CLOVER HAY 2 cuts	1915 WHEAT No Manure to any Plot		1916 SWEDES 15 tons F.Y.M. applied to all Plots		1917 BARLEY No Manure to any plot	
		Cwt.	Corn, bush.	Straw, cwt.	tons.	cwt.	Corn, bush.	Straw, cwt.
1	10 cwt. Basic Slag, 30%	53	31·7	34·3	8	5	20	18·2
2	5 cwt. Basic Slag, 30%	51	26·7	34·3	8	10	12·1	21·4
3	5 cwt. Basic Slag, 1 cwt. Muriate of Potash	53	27·9	35·3	8	7½	13·5	21·8
4	None	39	19·7	36·4	8	2½	14·3	16·4
5	4 cwt. 30% Super. .	56	25·4	37·1	9	10	13·5	18·2
6	4 cwt. Super., 1 cwt. Muriate of Potash	60	23·5	38·2	10	10	12·1	18·5

The basic slag used was of high citric solubility. It will be seen that the influence of both basic slag and superphosphate upon the clover was very marked.

The addition of muriate of potash to 5 cwt. of basic slag only slightly increased the yield of clover. Muriate of potash added to the superphosphate gave a rather larger return.

The extra nitrogen accumulated by the larger clover crop on all the manured plots, together with the residues of the mineral manures applied, influenced the wheat very considerably, especially on Plot 1.

The swedes were apparently slightly influenced by the effect of the superphosphate, and the barley by the effect of the slag, on Plot 1.

General Conclusions.

As has been already mentioned, the soil at Saxmundham contains numerous chalk stones, hence there is very little doubt that the first essential condition for a satisfactory growth of clover—a good supply of lime in the soil—is already present. Bearing this in mind, it is quite evident that farmyard manure, whether applied directly to the clover, or some years previously, has a very beneficial effect upon the crop. The fact that an active nitrogenous manure like nitrate of soda has little or no beneficial effect upon the clover points to the conclusion that it is not so much the nitrogen contained in the farmyard manure, as the other ingredients, which are of benefit to the clover.

There is, however, a further point which has been observed by the writer. In very dry seasons, such as 1921 (rainfall 13·26 inches at Saxmundham), it is quite evident, from an inspection of the plots at Saxmundham, that those which have received farmyard manure fairly recently are relatively more productive than those which have not. This is especially the case with the plot in Rotation I which receives 6 tons of farmyard manure annually. It is well known that the presence of an abundance of organic matter helps the soil to act as a sponge and to retain moisture rather than allowing it to run off as surface water or in the drains. In a dry district, such as East Anglia, with an average rainfall of not much over 20 in., rain which falls in the winter and often runs off in the drains would, without doubt, much increase the productivity of the land if it could be retained by the soil as by a sponge, and it is quite evident that this is what happens in the case of land receiving ample dressings of farmyard manure—it retains the moisture better, and in seasons when the moisture supply is a limiting factor in the crop the farmyard manure plot comes out best. At Saxmundham the moisture supply is often the limiting factor in the case of the clover crop, especially of the second crop of clover. In 1921 very little rain fell between the cutting of the first and second crop of clover, and owing to the extreme dryness of the soil when the first crop was cut, the second crop was very small—in the case of Rotation I, 9 cwt. per acre on the farmyard manure plot (the largest crop of any plot), and less than 1 cwt. per acre on the nitrate of soda plot. In the clover experiment given in Table III C, conducted at Saxmundham in 1914, the same limiting factor of absence of sufficient moisture was at work, as no rain fell between cutting the first and second crop of clover.

It would appear, therefore, that in a dry district another reason why farmyard manure or its residues benefit clover is that the organic matter of the farmyard manure helps the soil to hold moisture.

A problem which must arise in actual farm practice is whether it is best to apply the farmyard manure to the clover or to some other crop. The figures of Table II C giving the results of the experiments of Rotation II show very clearly that farmyard manure applied several years previously influences the clover considerably. In many parts of the country it is quite a usual practice to apply much of the farmyard manure to the roots, and probably this is sound. At the same time, if it is convenient, owing to special circumstances, to apply a dressing direct to the clover, there can be very little doubt as to the benefit that will ensue.

Pre-war highly citric soluble basic slag gave very good results on clover at Saxmundham, but very little information is available as to the effects of post-war low-quality slag.

It appears rather uncertain whether it will pay the heavy-land farmer to include any potash manure in his application to the clover layer. Very likely it may pay him to apply ½-cwt. of muriate of potash or its equivalent of some other potash manure with the phosphates, to fields which have not received any farmyard manure for some time. On lighter land the case is very different, and there is very little doubt that up to 1 cwt. of muriate of potash or its equivalent of 4 cwt. of kainit might safely be added to the phosphatic manure applied to the clover. Problems connected with the manuring of light land have not, however, been investigated in the experiments at Saxmundham.

In conclusion, the author wishes to express his indebtedness to Mr. Alfred Harwood, Chairman, and Mr. W. E. Watkins, Secretary, of the Committee in control of the Experiments, to Messrs. Harry Fiske and J. E. Smith, former Managers of the Experimental Station, and to Mr. Charles Cattermole, who has done most of the manual work connected with the experiments during the past twenty years. For the results of experiments conducted previous to 1911 he is indebted to reports published by the East Suffolk County Council or by the University of Cambridge, and written by the following: Messrs. R. Beverley, H. Fiske, K. J. J. Mackenzie, T. H. (now Sir Thomas) Middleton, L. F. Newman, W. R. Peel, J. E. Smith, Prof. W. Somerville and Mr. W. E. Watkins.

A. W. OLDERSHAW.

County Hall,
Ipswich.

CONTEMPORARY AGRICULTURAL LAW.

I.—LEGISLATION.

THERE has not been much legislation in the year 1922 affecting Agriculture, but there are some statutes which should be noticed. The statute that bulks most largely in the volume of Acts of Parliament for the year is the Law of Property Act, 1922 (12 & 13 Geo. 5, c. 16), which is intended to simplify the title to land by assimilating and amending the law of Real and Personal Estate, abolishing copyhold and other special tenures, amending the law relating to commonable lands and to intestacy, and amending certain Acts. It does not come into force until January 1, 1925, and though it deals with land generally, it does not specially affect agricultural land or the interests of landlord and tenant therein, except in so far as owners and occupiers of agricultural land are in common with other owners and occupiers interested in the simplification and cheapening of dealings in land. The Finance Act, 1922 (12 & 13 Geo. 5, c. 17), by Section 23 amends the definition of the expression "assessable value" in Schedule B of the Income Tax, 1918, by enacting that it shall have effect as though for the words "an amount equal to twice the annual value" there were substituted the words "an amount equal to the annual value," and as though for the words "an amount equal to the annual value" there were substituted the words "an amount equal to one-third the annual value." The result of this amendment is that farmers and other persons occupying lands for the purpose of husbandry will be liable to be assessed to income tax on an amount equal to the annual value thereof instead of on twice the annual value as has been the case since 1918, and that persons occupying lands, but not for the purpose of husbandry only or mainly for that purpose (*e.g.* woodlands), will be assessed on one-third of the annual value instead of on the annual value. The same Section also amends paragraph (*a*) of Rule 7 of the Rules applicable to Schedule B by substituting for the words "a year" the words "ten years," thus enabling an occupier of woodlands to claim assessment under Schedule D for woodlands managed on a commercial basis to be treated as a separate estate where planted or replanted since July 19, 1916, if notice is given to the General or Special Commissioners within ten years (instead of one year) after the time when they are so planted or replanted.

The Summer Time Act, 1922 (12 & 13 Geo. 5, c. 22), fixes 2 a.m. in the day next following the third Saturday in April, or if that day is Easter Day, the day next following the second Saturday in April, as the commencement of summer time; and

2 a.m. in the day next following the third Saturday in September as the end thereof. The Act only continues in force until December 31, 1923, unless Parliament otherwise determines.

The Allotments Act, 1922 (12 & 13 Geo. 5, c. 51) is important as considerably altering the law relating to allotments. For the first time it defines the expression "allotment garden," which had already been used in the Agriculture Act, 1920. It is expressed to mean "an allotment not exceeding 40 poles in extent which is wholly or mainly cultivated by the occupier for the production of vegetables or fruit crops for consumption by himself or his family." The Act by Section 1 prohibits the determination by the landlord of tenancies of allotment gardens by notice to quit or re-entry except by (*a*) a six-months' or longer notice to quit expiring on or before April 6 or on or after September 29 in any year; or (*b*) re-entry after three months' previous notice in writing to the tenant, under a power of re-entry contained in or affecting the contract of tenancy on account of the land being required for certain industrial purposes; or (*c*) re-entry under a power in that behalf in the contract of tenancy in the case of land let by a corporation or company being owners or lessees of a railway, dock, canal, water or other public undertaking on account of the land being required by the corporation or company for any purpose (not being the use of the land for agriculture) for which it was acquired or held by the corporation or company, but except in case of emergency three months' notice of the intended re-entry must be given; or (*d*) re-entry under power in that behalf in the contract of tenancy in the case of land let by a local authority (being land acquired by the local authority before the passing of the Act under the Housing Acts, 1890 to 1921), on account of the land being required by the local authority for the purposes of those Acts, and in the case of other land let by a local authority, on account of the land being required by the local authority for a purpose (not being the use of land for agriculture) for which it was acquired; or (*e*) re-entry for non-payment of rent or breach of any terms or conditions of the tenancy or on account of the tenant becoming bankrupt. But the Section is not to affect a notice to quit given before the passing of the Act. In the case of contracts of tenancy made before the passing of the Act, where the tenancy is by express provision or by implication made terminable by the landlord by notice to quit expiring between April 6 and September 29, it is to be terminable on September 29, and any such notice to quit given in accordance with the contract is to have the effect of a notice to quit on that day. Section 2 contains provision as to the compensation to be paid to the tenant of an allotment garden at the termination of the tenancy. It is only to be payable if the tenancy is terminated by the landlord (*a*) between April 6 and September 29, which can only happen where the notice to quit was given before the Act; or (*b*) by re-entry at any time under paragraphs (*b*), (*c*) or (*d*) of Sub-section 1 of Section 1. The compensation is to be for crops growing upon the land in the ordinary course of cultivation of the land as an allotment garden and for manure applied to the land. The Section also applies to any contract of tenancy made after the passing of the Act by which land is let to any local authority or association for the purpose of being sublet for use by the tenants as allotment gardens and notwithstanding that the crops have been grown and the manure applied by the tenants of the local authority or association. Having dealt with "allotment gardens," the provisions in respect of which are not to apply to any parcel of land attached to a cottage, the Act goes on to deal with other "allotments," which it defines in Section 3 as meaning "any parcel of land, whether attached to a cottage or not, if not more than two acres in extent, held by a tenant under a landlord and cultivated as a farm or a garden, or partly as a garden and partly as a farm." This definition is taken from the Allotments and Cottage Gardens Compensation for Crops Act, 1887, which is repealed by this Act, but the provisions of the Act of 1887 as to the compensation payable to a tenant on the determination of his tenancy are re-enacted. It is payable (*a*) for crops, including fruit, growing upon the land in the ordinary course of cultivation, and for labour expended upon and manure applied to the land; and (*b*) for fruit trees or bushes provided and planted by the tenant with the previous consent in writing of the landlord, and for drains, outbuildings, pigstyes, fowlhouses or other structural improvements made or erected by and at the expense of the tenant on the land with such consent. Section 4 applies both to allotments and allotment gardens, and empowers tenants of either before the termination of the tenancy to remove fruit trees or bushes provided and planted by the tenant, and any erection, fencing or other improvement erected or made by and at the expense of the tenant making good any injury caused by the removal. Under Section 6 compensation under the foregoing provisions will be determined by valuation made by a person appointed in default of agreement by the judge of the County Court of the district. Section 8 amends the statutory provisions as to compulsory acquisition of land for allotments, and amongst other things provides that no land shall be authorised by an order under the Allotments Acts to be hired compulsorily for the purposes of allotments which at the date of the order is pasture land, if it is proved to the satisfaction of the Minister of Agriculture and Fisheries that arable land which is equally suitable for the purpose of allotments to the pasture land proposed to be compulsorily hired is reasonably available for hiring by the Council. It is also provided that paragraph 2 (*b*) of Part II of Schedule I to the Small Holdings and Allotments Act, 1908 (which restricts the breaking up of pasture land compulsorily hired) shall not apply to land compulsorily hired for the provision of allotment gardens. Section 10 is intended to make unoccupied land in urban districts temporarily available for the provision of allotment gardens, and gives power to borough or urban district councils to enter upon unoccupied land (*i.e.* land not the subject of a rateable occupation) for the purpose of providing allotment gardens and letting the same. The right of occupation of the Council is made terminable by not less than six months' notice in writing by the Council to the owner, or by not less than two months' notice in writing by the owner to the Council, where in the latter case the land is required for any purpose other than the use of the land for agriculture. Section 12 enacts that where an order has been made for the compulsory acquisition of any land and notice to treat is not served by the acquiring authority within three months after the date of the order or its confirmation, the order will become null and void. This is intended to avoid the hardship which has occurred in some cases of a compulsory order for the acquisition of land for allotments being made and nothing being done under it for a prolonged period, during which the owner and occupier have remained in uncertainty whether they are to be deprived of their land or not. When such an order has thus become null and void, no other order authorising the compulsory acquisition of that land will, if made within three years, be valid unless confirmed by the Minister for special reasons. Section 15 empowers County Councils to let land acquired for small holdings for cultivation as an allotment. Section 19 prescribes penalties for damage to an allotment garden or any crops or fences or buildings thereon, if notice of the provision is conspicuously displayed on or near the allotment garden.

The Milk and Dairies (Amendment) Act, 1922 (12 & 13 Geo. 5, c. 54), further postpones the operation of the Milk and Dairies (Consolidation) Act, 1915 (see R.A.S.E. *Journal*, vol. 76, p. 141), to September 1, 1925. Section 2 empowers local authorities to refuse registration of or to remove from the register retailers of milk if satisfied that the public health is likely to be endangered by any act or default of any such person. Section 3 enables licences to be given by the Minister of Health to sell milk under special designations, *e.g.* as "certified," "Grade A," or "pasteurised." Section 4 prohibits the addition of any colouring matter to milk, and the sale or offering for sale as milk liquid in the making of which dried milk or condensed milk has been used. Section 5 imposes heavy penalties upon any person selling or offering for sale the milk of a cow suffering from tuberculosis of the udder, and a person will be guilty of an offence under the Section if he knew, or could by the exercise of ordinary care have known, that the cow was suffering from that disease. The Act came into operation on September 1, 1922.

The only remaining Act to be noticed is the Importation of Animals Act, 1922 (13 Geo. 5, c. 5), passed at the end of the year in the second Session of Parliament, for the purpose of admitting the importation of Canadian store cattle. Section 1 permits the importation of such cattle without requiring them to be dealt with and slaughtered on landing, in accordance with the provisions of Part I of the Third Schedule to the Diseases of Animals Act, 1894, upon certain conditions, which include (*a*) the marking of the cattle indelibly; (*b*) the inspection of the vessel in which they are conveyed; (*c*) the satisfaction of the Minister of Agriculture and Fisheries that the cattle have been isolated before shipment and examined and found free from cattle plague, pleuro-pneumonia, or foot-and-mouth disease, that they are not affected by mange, that they have been kept separate from other animals and daily examined by a veterinary officer during the voyage and found free from disease; and (*d*) that they are landed at a port approved by the Minister. They must be detained and isolated at the landing-place for such period as may be required for thorough examination by veterinary inspectors and until the movement therefrom is licensed. If any animal is found to be affected with any of the specified diseases, all the cattle who have been exposed to the infection of the disease must be slaughtered. The Minister may by order suspend the operation of this Section during any period during which he has reason to believe that cattle plague, pleuro-pneumonia or foot-and-mouth disease exists in the Dominion of Canada. By Section 3 of the Act the word "imported" is substituted for "foreign" wherever that word is used in relation to an animal or thing in the Diseases of Animals Act, 1894, and an imported animal or thing is to mean an animal or thing brought to Great Britain from a country out of Great Britain. This Section has the effect of extending the powers of the Act of 1894 given to the Minister of Agriculture and Fisheries to prohibit or allow the landing of animals from abroad to the case of animals from Ireland, and it is further expressly provided that if the Minister is satisfied that cattle plague, pleuro-pneumonia or foot-and-mouth disease exists, or have recently existed in, or that adequate provision is not made for the prevention of the introduction of any such disease into any part of Ireland, he may by order prohibit the landing in Great Britain of animals brought from Ireland. The Schedule to the Act contains regulations for the movement of imported animals with regard to licenses for movement from the landing-place, and conditions to be complied with in the case of such cattle in authorised markets. The Act is to come into operation on such date, not later than April 1, 1923, as His Majesty may by Order in Council appoint.

II.—DECISIONS OF THE COURTS.

1. *Labour.* The case of *Waghorn* v. *Collis* (91 L.J.K.B., 735) arose under the now repealed Corn Production Act, 1917, which provided by Section 4, Sub-section 1, that an employer who failed to pay a workman in agriculture the minimum wage fixed by the Act should be liable on summary conviction to a pecuniary penalty. It was held that the liability to a pecuniary penalty was not the only liability of . defaulting employer, but that the Court could also entertain a claim for arrears of wages based on the difference between the amount paid and the minimum rates under the Act. No such question can arise under Section 4 of the Corn Production Acts (Repeal) Act, 1921 (*see* R.A.S.E. *Journal*, vol. 82, p. 158), as the rate of wages arrived at in any district by a joint Conciliation Committee is not enforceable by any penalty, but is only recoverable by civil proceedings.

Bovill, In re, Vellacott, In re (91 L.J.K.B. 238; [1922], 1 K.B. 466) dealt with various employments with regard to the question whether or not they are insurable under the Unemployment Insurance Act, 1920, which, it will be remembered, does not extend to labourers employed in agriculture. It was held amongst others that huntsmen, whips, kennelmen, gamekeepers, and dairymaids are persons employed in employments excepted from insurance under the Act.

2. *Stock.* *Brocklebank* v. *Manton* (39 Times L.R. 112) is to be noted by persons putting out animals on what is known as agistment. It was a case where the plaintiff and defendant had both been in the habit of agisting horses with a farmer, and the defendant having obtained a mare on approval with a warranty that she was quiet, put her in the same field with the plaintiff's horse. Next morning the two animals were found in circumstances which indicated that the mare had kicked the horse and broken his leg. The plaintiff sued for damages. It was held that the mare had only done what the defendant had reason to expect she might do by reason of the nature of mares under such circumstances, and therefore the plaintiff was entitled to damages for his loss, without having expressly to prove that the mare was of a vicious disposition to the defendant's knowledge.

In *Hunt* v. *Cook* (66 Sol. J. 557) the plaintiff who resided in the neighbourhood of a poultry farm brought an action to restrain the nuisance which he alleged he suffered from the cock crowing. It appeared that a previous owner of the plaintiff's house had brought a similar action against the defendants, which was compromised and stayed, and the defendants now contended that the matter having been already dealt with, was a bar to the present action. It was held that this was not so, and that the plaintiff was not debarred from suing, so the case was fought out, and Mr. Justice Eve held that no actionable nuisance was proved.

3. *Landlord and Tenant.* The year has been remarkable for an unusually large crop of Landlord and Tenant cases, chiefly arising out of recent legislation. In *McCreagh* v. *Frearson* (91 L.J.K.B. 365) application was made to set aside the award of an arbitrator under the Agricultural Holdings Acts on the ground of his alleged misconduct. The application was not made until more than six weeks after the making of the award, and it was contended that it was therefore out of time, since a rule of the High Court, provides that an application to set aside an award is to be made within six weeks after the award. It was however held that the rule did not apply to proceedings in the County Court, and that there was no time limit applicable unless under the Statute of Limitations and the doctrine of *laches*. A time limit of twenty-one days from the making of the award has however since been provided by an amendment to the County Court rules.

Jones and Carter's Arbitration, In re (91 L.J.Ch. 824 ; [1922] 2 Ch. 599) was another case of an application to set aside the award of an arbitrator in an agricultural arbitration. The application was to the High Court of Justice on the ground of error appearing on the face of the award and inconsistency, and not of error arising from legal misconduct of the arbitrator. It was argued that any appeal from an arbitrator's award must be to the County Court under the provisions of the Agricultural Holdings Act, 1908, Schedule II, Rule 13 of which provides that where an arbitrator has misconducted himself or an arbitration or award has been improperly procured, the County Court may set the award aside. It was held by the Court of Appeal that this rule does not cover the case of error on the face of the award, and that as the Act does not anywhere specially oust the jurisdiction of the High Court, that jurisdiction must be deemed to remain. Therefore an appeal to set aside an award on the ground of error or the face of it, as distinguished from error arising from legal misconduct of the arbitrator, lies to the High Court and not to the County Court.

In *Blay* v. *Dadswell* (91 L.J.K.B. 739 ; [1922] 1 K.B. 632) the question arose under the Agricultural Land Sales (Restriction of Notices to Quit) Act, 1919, which avoids a notice to quit agricultural land in cases where the land is contracted to be sold after the notice has been given and before its expiry. In the present case the holding had been sold to the plaintiff before the notice to quit, which was for Michaelmas, 1920, was served, but he afterwards resold portion of it to the tenant himself. This, although the purchaser was the tenant himself, was held to invalidate the notice to quit. It was also held in the same case that the amendment made in the Restriction of Notices to Quit Act, 1919, by the Agriculture Act, 1920, restricting the operation of the Act of 1919 to cases where the contract of sale is made by the giver of the notice to quit, is not retrospective so as to be applicable to cases such as this case, where the notice would, if valid, have expired before the commencement of the Act.

Murphy v. *Hurley* (91 L.J.P.C. 116; [1922] 1 A.C. 369) was an Irish case, where it was a condition of the tenancy that a sea-wall built along the edge of his property by the landlord to protect the holdings of his tenants from the sea should be kept in repair by the landlord, and rent was paid and received on that basis. The landlord was held liable for damage caused to the tenants by the incursion of sea-water owing to non-repair of the wall, and notice to the landlord that the wall was out of repair was held not to be a condition precedent to his liability for the damage caused, though such notice is required to make the landlord liable for damage in ordinary cases arising from breach of a covenant on his part to repair the premises.

Several cases have arisen under the recent Agriculture Act, 1920. By Section 10, Sub-section 1 of that Act, which gives the tenant who has received a notice to quit a right to compensation for disturbance, it is provided that the compensation shall not be payable in any case where the landlord has made an offer in writing to withdraw the notice to quit and the tenant has unreasonably refused or failed to accept the offer. In *Perrett and Benett-Stanford's Arbitration, In re* (91 L.J.K.B. 930; [1922] 2 K.B. 592) the landlord had given the tenant notice to quit, but had offered to withdraw it and allow the tenant to remain in occupation at a substantially increased rent. This was held not to be an offer to withdraw the notice to quit, and the Court of Appeal intimated its opinion that a withdrawal of a notice to quit to avoid the landlord's liability for disturbance should be unconditional. The Master of the Rolls said: "It is impossible, in my opinion, by any stretch of language, to say that an offer that a man may remain in occupation of his farm if he pays £670 a year is any withdrawal of a notice to determine the then tenancy which was at £500 a year rent."

In *Hamilton Gell* v. *White* (91 L.J.K.B. 875; [1922] 2 K.B.

422) a tenant who had on September 29, 1920, received notice to quit his farm on September 29, 1921, gave notice on November 17, 1920, of his intention to claim compensation under Section 11 of the Agricultural Holdings Act, 1908. That Section was repealed by the Agriculture Act, 1920, which came into force on January 1, 1921, and by Section 10 substituted a new right to compensation for disturbance to be computed at an amount equal to one year's rent of the holding. The tenant gave no notice of his intention to claim compensation under that Section as required by Sub-section 7 (*b*) thereof. It was held by the Court of Appeal that he had no right to claim the full year's rent under Section 10 of the Act of 1920, not having given the required notice of intention, but that his right of making a claim under Section 11 of the Agricultural Holdings Act, 1908, for the actual loss and expense incurred in going out, was preserved by the Interpretation Act, 1889, Section 38, as a "right acquired" at the date of the repeal of Section 11 of the Act of 1908 by the Act of 1920.

By Section 18, Sub-section 1 of the Agriculture Act, 1920, differences arising out of claims by a tenant against a landlord for compensation for improvements, etc., or out of claims by a landlord against a tenant for any breach of contract or otherwise in respect of the holding, are to be determined by arbitration and by Sub-section 2: "Any such claim as is mentioned in this Section shall cease to be enforceable after the expiration of two months from the termination of the tenancy unless particulars thereof have been given by the landlord to the tenant or by the tenant to the landlord, as the case may be, before the expiration of that period." In *Jones* v. *Evans* (92 L.J.K.B. 35) a question arose as to the sufficiency of a landlord's particulars of claim against the tenant for breaches of agreement. The particulars stated the heads of claim in general terms and did not state the amount claimed, *e.g.* "1. For neglect or failure to keep the dwelling-house, cowhouse, stable, pigstyes, cattle shed, the loft of the old house, and premises generally in substantial repair. . . . 6. For failure to cultivate the said farm and lands in a good husbandlike manner according to the custom of the country." It was held by the Court of Appeal, affirming the judgment of the County Court Judge, that the particulars were sufficient. They considered that having regard to the severity of the penalty for not giving the particulars in time—namely, the unenforceability of the claim—and having regard to the fact that the particulars are not bound to be given in writing, the presumption is that the requirement as to particulars is not intended to be construed strictly, and that it is in general sufficient if the document or conversation which contains the particulars gives an indication to the other side of the particular kind of claim which is going to be made, even though such particulars may have to be amplified when the parties come before the arbitrator. Lord Justice Bankes stated his opinion to be that particulars, though scanty, are particulars within the Section provided they contain information as to the nature of the claim as distinguished from the class of claim.

Dale v. *Hatfield Chase Corporation* ([1922] 2 K.B. 282) was a case where compensation for disturbance was claimed under Section 11 of the Act of 1908, as the tenancy was terminated on February 2, 1920, before the Act of 1920 came into operation. Section 11 of the Act of 1908 provides that no compensation shall be payable to the tenant for loss or expenses incurred in connection with the sale or removal of his household goods, implements, produce or farm stock, unless he has given to the landlord a reasonable opportunity of making a valuation of such goods, implements, produce and stock. A similar provision is contained in Section 10 of the Act of 1920. It was held by the Court of Appeal that the question whether the tenant has given such a reasonable opportunity is in each case a question of fact depending on the circumstances. The mere lapse of an interval of several months between notice of intention to claim compensation and sale or removal is not of itself sufficient to satisfy the condition. It was held in the same case that where the tenant of an agricultural holding has given notice to his landlord of his intention to claim compensation for disturbance, and the landlord before the appointment of an arbitrator to decide the question sells the land subject to the tenancy, the person who is liable to pay such compensation as may be awarded is the person who is entitled to receive the rent at the termination of the tenancy, and the notice of intention to claim given to the original landlord will enure for the benefit of the tenant against such last-named person. It was also held that for the purpose of Section 48, Sub-section 2 of the Act of 1908, which provides that the designations of "landlord" and "tenant" shall continue to apply to the parties "until the conclusion of any proceedings" taken under the Act in respect of compensation, the commencement of the "proceedings" is not the service of notice of intention to claim compensation, but the appointment of the arbitrator.

In *Russell and Harding's Arbitration, In re* (39 Times L.R. 92) it was held that the mere fact that the farmhouse on a large farm has for a time been let by the tenant to a sub-tenant with the approval of the landlord for the purpose of taking in paying guests does not prevent the farm from being a "holding" within the definition in Section 48, Sub-section 1 of the Agricultural Holdings Act, 1908, *i.e.* a parcel of land held by a tenant "which is either wholly agricultural or wholly pastoral, or in part agricultural and as to the residue pastoral," so as to entitle the tenant to obtain the compensation given by that Act and the Act of 1920.

Greenshields v. *Roger* (91 L.J.P.C. 177; [1922] S.C. (H.L.) 140) was a Scottish case which went up to the House of Lords. The question arose under Sections of the Agricultural Holdings (Scotland) Act, 1908, which correspond with Sections 6 and 13 of the English Act, requiring questions between landlord and tenant arising under the Act or the contract of tenancy to be determined by a single arbitrator notwithstanding any agreement providing for a different method of arbitration. The landlord had agreed with the incoming tenant that the latter should relieve him of the claim of the outgoing tenant, and a clause to this effect was inserted in the lease to the incoming tenant, and was communicated to the outgoing tenant. It was held that a question between the outgoing and the incoming tenant as to the compensation payable was not a case of the landlord and tenant failing to agree within Section 6, Sub-section 1 of the Act, and therefore it might properly be determined by two arbiters and an oversman (*Anglice*, two arbitrators and an umpire) as in an ordinary arbitration not within the Act.

In the very recent and important case of *Edell* v. *Dulieu* ([1923] W.N. 23) it was held that Section 28 of the Agriculture Act, 1920, which enacts that a notice to quit a holding shall be invalid if it purports to terminate the tenancy before the expiration of twelve months from the end of the then current year of the tenancy, only applies to yearly tenancies, and not to a notice to terminate a lease for twenty-one years under a power to determine at the end of seven or fourteen years by a six-months' notice. Also it was held that such a notice to terminate a lease is not a notice to quit within Section 10 of the same Act, and therefore that the tenant under such a lease whose tenancy is so determined is not entitled to compensation for disturbance like the more fortunate tenant who holds under a yearly tenancy and whose tenancy is brought to an end by an ordinary notice to quit.

4. *Produce.* Under this head some cases should be noted relating to the sale of milk. In *Dewey* v. *Faulkner* (39 Times L.R. 130) one Faulkner was charged with selling milk from which 10 per cent. of the original fat had been abstracted. He relied as a defence under Section 25 of the Food and Drugs Act, 1875, on a written warranty which he alleged was contained in (1) a memorandum of agreement for sale of "new milk" between him and a dairy company from whom he purchased, and (2) a written label attached to the churns sent under the contract by the dairy company bearing the words "Guaranteed pure unskimmed milk with all its cream." The Court held that

the label attached to the churns was not a warranty within the Act, there being nothing to connect it with the written agreement for sale. They also held that the agreement to supply "new milk" was not a warranty that the milk satisfied the requirements of the Act. In *Penrice* v. *Brander* ([1921] S.C.(J.) 63), which was a Scottish case, a farmer was charged with contravening Section 6 of the Sale of Food and Drugs Act, 1875, by selling milk which was not genuine by reason of its containing less than 3 per cent. of milk fat. The alleged deficiency in fat was established, but it was also proved that the milk had not been tampered with in any way, the deficiency being due to the milk having stood for some time in the cans and to the samples having been drawn from the tap at the bottom after the cream had risen. It was further proved that sellers of milk recognised the necessity of redistributing the milk fat; and that the method which the accused instructed his servant to follow, but which the servant omitted on that occasion in question, was to draw off a quantity of milk from the bottom of the can and to pour it at the top before proceeding to sell the milk. It was held that the offence of selling milk which was not genuine had been proved.

5. *Miscellaneous.* Two questions relating to Income Tax may first be noticed under this head. In *Donald* v. *Inland Revenue Commissioners* ([1922] S.C. 237) a farmer rented the seasonal grazing of certain grass parks which he used as an accessory to his farm. He was assessed under Schedule B in respect of his occupation of the farm and under Schedule D in respect of the profits from the grazing of the grass parks. The owner of the grass parks was assessed under Schedule A as owner and under Schedule B as occupier. The farmer appealed against the assessment under Schedule D, contending that his assessment under Schedule B covered his whole profits as a farmer, and further that any profits from the grazings were incapable of being separately ascertained. It was held that he was rightly assessed under Schedule D, and that the Commissioners in the absence of any return by him of his profits were justified in estimating them on the basis of the rental of the parks for the year preceding the year of assessment. In *Inland Revenue Commissioners* v. *Anderson* ([1922] S.C. 284) a Scottish farmer renting a farm at £750, had let the right of shooting over his farm at a rent of £250, and he claimed that the assessment on him for income tax under Schedule B should be reduced by the rent he received from sub-letting the shooting. It was held that the farmer was the occupier of the land and not the shooting tenant and the farmer must be assessed on his full rent under Schedule B, and could not be relieved by transferring any part of the burden to the shooting tenant.

In *Knowles* v. *Salford Corporation* (91 L.J.Ch. 406; [1922] 1 Ch. 328) a landowner applied for an injunction to restrain a corporation from hiring land from him compulsorily for the purpose of providing allotments, on the ground that the land in question was pasture land, and that as its use for allotments would involve breaking it up, the order could not under the words of paragraph 2 of Part II of the First Schedule to the Small Holdings and Allotments Act, 1908, be made unless the Minister of Agriculture and Fisheries is satisfied that no other suitable land in the neighbourhood is available. The Court, however, held that all that is required by the enactment in question is that the Minister should express his satisfaction that the land included in the order cannot be successfully cultivated for allotments without breaking up the pasture (a fairly obvious conclusion, having regard to the ordinary nature of allotments), and that it is not necessary that he should express his satisfaction that no land in the neighbourhood can be provided for allotments without breaking up pasture. The question, however, of taking and breaking up pasture land for allotments has since been dealt with by Section 8 of the Allotments Act, 1922 (see *ante*), and no pasture land may now be compulsorily hired for allotments if it is proved to the satisfaction of the Minister that equally suitable arable land is reasonably available for hiring.

In *Thomas* v. *Gower Rural Council* (91 L.J.K.B. 666; [1922] 2 K.B. 76) it was held that Section 67 of the Highways Act, 1835, which empowers the surveyor of highways to "scour, cleanse, and keep open all ditches, gutters, drains, or watercourses, and also to make and lay such trunks, tunnels, plats, or bridges . . . in and through any lands or grounds adjoining or lying near to any highway, upon paying the owner, etc.," does not authorise a highway authority to divert water from the highway on to private lands.

Geoghegan v. *Henry* ([1922] 2 Ir.R.1) was an Irish case where a landowner, over whose holding an adjoining owner had a private general right of way, erected a gate across the passage over which this right of way existed, without however any intention of interfering with or derogating from the rights of the adjoining owner. The latter objecting to the obstruction, left the gate open after he had used the way. The landowner over whose land the way passed claimed damages for the failure and refusal of the other to close the gate. It was held that the gate having been erected by the one owner in the reasonable and proper exercise of his rights in his own property, there was an obligation cast upon the other to close when using the way.

AUBREY J. SPENCER.

15 Old Square,
Lincoln's Inn, W.C.

TABLE I.—Acreage under Crops and Grass; *and* Number *of* Live Stock *on the 3rd June,* 1922, *and 4th June,* 1921, *in England and Wales.*

	England		Wales	
	1922	1921	1922	1921
Total Area (excluding water)	Acres 32,385,350		Acres 4,751,276	
Total Acreage under Crops and Grass (*a*)	23,421,673	23,541,733	2,604,120	2,602,338
Arable Land	10,583,258	10,843,512	727,257	774,724
Permanent Grass for Hay	3,893,036	3,568,978	520,082	483,472
,, ,, not for Hay	8,945,379	9,129,243	1,356,781	1,344,142
Rough Grazings	3,291,554	3,235,561	1,489,922	1,496,276
Wheat	1,931,261	1,937,254	35,656	38,750
Barley	1,302,635	1,355,869	61,413	79,751
Oats	1,961,457	1,933,410	202,508	215,533
Mixed Corn	105,540	114,588	19,684	20,896
Rye	84,012	78,451	570	380
Beans	283,687	245,370	1,241	1,449
Peas	173,045	142,044	566	554
Potatoes	536,244	531,648	24,933	26,152
Turnips and Swedes	775,212	845,015	45,916	49,995
Mangolds	411,126	364,415	11,515	10,356
Cabbage, Kohl-Rabi and Rape (*b*)	127,186	136,593	9,590	13,270
Vetches or Tares	135,285	102,916	894	770
Lucerne	50,466	46,965	164	209
Hops	26,452	25,133	—	—
Small Fruit	73,972	71,748	774	839
Clover, Sainfoin, and Grasses under Rotation for Hay	1,334,497	1,568,554	193,149	188,982
,, ,, ,, ,, not for Hay	664,720	675,416	110,279	116,082
Other Crops	207,480	170,347	2,418	1,850
Bare Fallow	398,981	497,776	5,987	8,906
	No.	No.	No.	No.
Horses used for Agriculture (*c*)	721,572	736,478	83,522	86,261
Stallions being used for service	4,989	5,915	1,085	1,254
Unbroken Horses One year and above	189,703	190,909	34,784	34,599
Under one year	66,807	74,545	17,083	17,724
Total	983,071	1,007,847	136,474	139,838
Other Horses	197,631	209,737	23,319	27,165
TOTAL OF HORSES	1,180,702	1,217,584	159,793	167,003
Cows and Heifers in Milk	1,684,436	1,630,044	249,550	246,070
Cows in Calf but not in Milk	256,919	226,093	31,715	25,725
Heifers in Calf	270,322	344,214	28,999	29,251
Bulls being used for service	70,442	66,235	12,105	12,507
Other Cattle:—Two years and above	764,860	839,961	75,506	82,813
,, ,, One year and under two	987,313	744,321	179,747	149,196
,, ,, Under one year	936,597	941,439	174,150	178,855
TOTAL OF CATTLE	4,970,889	4,792,307	751,772	724,417
Ewes kept for Breeding	4,019,679	3,979,389	1,408,467	1,357,147
Rams and Ram Lambs to be used for service	108,962	121,242	43,227	44,587
Other Sheep:—One year and above	1,570,947	2,101,374	566,758	583,684
,, ,, Under one year	4,472,806	4,412,631	1,247,174	1,231,459
TOTAL OF SHEEP	10,172,394	10,614,636	3,265,626	3,216,877
Sows kept for Breeding	275,164	306,107	26,882	29,786
Boars being used for service	21,325	22,624	1,496	1,510
Other Pigs	1,818,356	1,961,373	155,713	184,066
TOTAL OF PIGS	2,114,845	2,290,104	184,091	215,362

(*a*) Not including Rough Grazings.

(*b*) In 1922 cabbage for fodder only is included, but in 1921 cabbage for human consumption is also included.

(*c*) Including Mares kept for Breeding.

TABLE II.—Total Produce, Acreage, and Yield per Acre *of* 1922 *and* 1921, *with the Average*

Crops	Total Produce		Acreage		Yield per Acre		Average of Ten Years
	1922	1921	1922	1921	1922	1921	1912-1921
WHEAT.	Qrs.	Qrs	Acres	Acres	Bush.	Bush.	Bushels.
England . . .	7,540,000	8,585,000	1,931,214	1,937,229	31·2	35·5	30·8
Wales . . .	124,000	137,000	35,652	38,750	27·9	28·3	27·5
Scotland . . .	315,000	321,000	65,251	65,191	38·6	39·4	39·3
GREAT BRITAIN .	7,979,000	9,043,000	(*d*)2,032,117	(*d*)2,041,170	31·4	35·4	31·0
Ireland . . .	177,000	181,000	40,864	42,963	34·7	33·8	35·8
UNITED KINGDOM	8,156,000	9,224,000	2,072,981	2,084,133	31·5	35·4	31·2
BARLEY (*b*)							
England . . .	4,854,000	5,069,000	1,302,364	1,355,824	29·8	29·9	30·9
Wales . . .	214,000	240,000	61,388	79,751	28·0	24·1	29·5
Scotland . . .	736,000	739,000	157,020	170,716	37·5	34·6	35·4
GREAT BRITAIN .	5,804,000	6,048,000	(*e*)1,520,772	(*e*)1,606,291	30·5	30·1	31·3
Ireland . . .	860,000	714,000	170,265	175,460	40·3	32·6	40·8
UNITED KINGDOM	6,664,000	6,762,000	1,691,037	1,781,751	31·5	30·4	32·3
OATS.							
England . . .	8,543,000	9,277,000	1,955,494	1,932,236	34·9	38·4	38·9
Wales . . .	746,000	756,000	201,648	215,358	29·6	28·1	33·7
Scotland . . .	4,812,000	4,793,000	988,392	1,011,615	38·9	37·9	39·3
GREAT BRITAIN .	14,101,000	14,826,000	(*f*)3,145,534	(*f*)3,159,209	35·9	37·5	38·6
Ireland . . .	6,317,000	5,768,000	1,213,692	1,254,189	41·6	36·8	48·5
UNITED KINGDOM	20,418,000	20,594,000	4,359,226	4,413,398	37·5	37·3	41·4
BEANS.							
England . . .	834,000	774,000	270,942	235,902	24·6	26·3	27·3
Wales . . .	3,500	3,700	1,079	1,272	26·0	23·5	27·3
Scotland . . .	16,000	18,700	3,692	4,704	34·6	31·7	36·7
GREAT BRITAIN .	853,500	796,400	(*g*)275,713	(*g*)241,878	24·8	26·3	27·5
Ireland . . .	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	†44·0
UNITED KINGDOM	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	†27·9
PEAS.							
England . . .	261,000	312,000	122,502	105,362	17·0	23·7	24·8
Wales . . .	490	810	215	337	18·3	19·3	21·8
Scotland . . .	200	260	102	102	15·4	20·0	23·6
GREAT BRITAIN .	261,690	313,070	(*g*)122,819	(*g*)105,801	17·0	23·7	24·8
Ireland . . .	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	†30·2
UNITED KINGDOM	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	†24·2

(*a*) The particulars for Ireland have been furnished by the Department of Agriculture and Technical Instruction for Ireland, and those for Scotland by the Board of Agriculture for Scotland. No Produce Statistics are collected for the Channel Islands and the Isle of Man.

(*b*) Including Bere.

(*c*) No Hops are grown in any other part of the United Kingdom.

(*d*) Exclusive of a certain area (amounting in 1922 to 51 acres), the produce of which was cut green.

(*e*) Exclusive of a certain area (amounting in 1922 to 296 acres) the produce of which was cut green.

each of the Principal Crops *in the* United Kingdom (*a*) *in of the Ten Years* 1912–1921.

Crops—*continued*	Total Produce		Acreage		Yield per Acre		Average of the Ten Years 1912–1921
	1922	1921	1922	1921	1922	1921	
POTATOES.	Tons	Tons	Acres	Acres	Tons	Tons	Tons
England . . .	3,846,000	2,812,000	536,244	531,648	7·2	5·3	6·0
Wales . . .	166,000	146,000	24,933	26,152	6·6	5·6	5·3
Scotland . . .	1,191,000	1,040,000	157,404	153,820	7·6	6·8	6·5
GREAT BRITAIN .	5,203,000	3,998,000	718,581	711,620	7·2	5·6	6·1
Ireland . . .	3,431,000	2,556,000	569,549	568,091	6·0	4·5	5·1
UNITED KINGDOM	8,634,000	6,554,000	1,288,130	1,279,711	6·7	5·1	5·6
TURNIPS AND SWEDES.							
England . . .	10,372,000	5,978,000	773,770	843,181	13·4	7·1	12·1
Wales . . .	536,000	630,000	45,916	49,995	11·7	12·6	14·3
Scotland . . .	6,880,000	7,132,000	404,112	410,789	17·0	17·4	16·6
GREAT BRITAIN .	17,788,000	13,740,000	(*h*)1,223,798	(*h*)1,303,965	14·5	10·5	13·6
Ireland . . .	3,438,000	3,882,000	247,911	265,599	13·9	14·6	16·4
UNITED KINGDOM	21,226,000	17,622,000	1,471,709	1,569,564	14·4	11·2	14·1
MANGOLDS.							
England . . .	8,383,000	6,077,000	409,873	362,709	20·5	16·8	18·8
Wales . . .	177,000	174,000	11,515	10,356	15·4	16·8	17·1
Scotland . . .	34,600	35,500	2,008	1,771	17·2	20·0	19·5
GREAT BRITAIN .	8,594,600	6,286,500	(*h*)423,396	(*h*)374,836	20·3	16·8	18·7
Ireland . . .	1,330,000	1,510,000	83,554	78,643	15·9	19·2	19·3
UNITED KINGDOM	9,924,600	7,796,500	506,950	453,479	19·6	17·2	18·8
HAY *from* CLOVER, SAINFOIN, &C.					Cwt.	Cwt.	Cwt.
England . . .	1,518,000	1,956,000	1,334,497	1,568,554	22·7	24·9	28·8
Wales . . .	213,000	188,000	193,149	188,982	22·1	20·0	25·1
Scotland . . .	679,000	581,000	431,601	410,556	31·5	28·3	30·7
GREAT BRITAIN .	2,410,000	2,725,000	1,959,247	2,168,002	24·6	25·1	28·9
Ireland . . .	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	36·6†
UNITED KINGDOM	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	32·0†
HAY *from* PERMANENT GRASS.							
England . . .	3,586,000	2,840,000	3,893,036	3,568,978	18·4	15·9	21·8
Wales . . .	472,000	355,000	520,082	483,472	18·2	14·7	19·6
Scotland . . .	223,000	205,000	144,804	142,964	30·9	28·7	30·4
GREAT BRITAIN .	4,281,000	3,400,000	4,557,922	4,195,414	18·8	16·2	21·8
Ireland . . .	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	41·7†
UNITED KINGDOM	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	(*i*)	27·4†
HOPS.	Cwt.	Cwt.					
England (*c*) . .	301,000	224,000	26,452	25,133	11·4	8·9	10·4

(*f*) Exclusive of a certain area (amounting in 1922 to 6,823 acres) the produce of which was cut green.

(*g*) Exclusive of a certain area (amounting in 1922 to 12,907 acres of beans and 51,252 acres of peas) the produce of which was cut or picked green.

(*h*) Exclusive of a certain area (amounting in 1922 to 1,442 acres of turnips and swedes, and 1,253 acres of mangolds) on which the crops were grown for the production of seed.

(*i*) Figures for Ireland not available. The total acreage of hay (from clover, etc., and permanent grass) in Ireland, in 1922, was 2,544,404 acres, and the total production 4,625,918 tons.

† Average for 7 years only.

TABLE III.—**Hops** :—*Total Produce, Acreage, and Yield per Acre, in* 1922 *and* 1921, *in each County of England in which* **Hops** *were grown ; and the Average Yield of the Ten Years* 1912–1921.

COUNTIES	Total produce		Acreage		Yield per acre		Average of the Ten years 1912–21
	1922	1921	1922	1921	1922	1921	
	Cwt.	Cwt.	Acres	Acres	Cwt.	Cwt.	Cwt.
TOTAL FOR ENGLAND .	301,000	224,000	26,452	25,133	11·4	8·9	10·4
Kent East . . .	46,000	39,000	4,095	4,005	11·2	9·6	11·4
Mid . . .	72,000	52,000	5,528	5,414	13·1	9·7	12·0
Weald . .	88,000	52,000	7,113	6,634	12·4	7·9	10·7
Total—Kent	206,000	143,000	16,736	16,053	12·3	8·9	11·3
Hampshire	11,000	9,000	1,073	1,043	10·3	8·4	9·9
Surrey	2,200	1,500	217	196	10·1	7·4	8·2
Sussex, East . . .	32,500	12,000	2,271	2,186	14·3	5·6	9·8
„ West . . .	950	730	83	83	11·4	8·8	10·9
Gloucester	85	8	10	10	8·5	0·8	—
Hereford	30,000	33,000	3,945	3,522	7·6	9·5	8·1
Salop	370	750	73	73	5·0	10·2	7·0
Worcester	17,700	24,000	2,032	1,963	8·7	12·1	8·7
Berkshire	40	6	11	4	3·5	1·5	—
Suffolk, East . . .	—	—	1	—	—	—	—

TABLE IV.—*Annual Average* **Prices**, *per Imperial Quarter and per Imperial Bushel, of* **British Corn**, *in England and Wales, from* 1914 *to* 1922 ; *with the Value of* £100 *of Tithe Rent-Charge, based on the Septennial Average Prices.*

YEAR	Annual average price per Imperial Quarter						Annual average price per Imperial Bushel						Value of tithe rent-charge of £100[1]		
	Wheat		Barley		Oats		Wheat		Barley		Oats				
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	£	*s.*	*d.*
1914	34	11	27	2	20	11	4	4¼	3	4¾	2	7¼	77	1	4¼
1915	52	10	37	4	30	2	6	7¼	4	8	3	9¼	83	2	6¾
1916	58	5	53	6	33	5	7	3½	6	8¼	4	2	92	1	0¼
1917	75	9	64	9	49	10	9	5½	8	1	6	2¾	[1]109	3	11
1918	72	10	59	0	49	4	9	1¼	7	4½	6	2	[1]109	3	11
1919	72	11	75	9	52	5	9	1¼	9	5½	6	6½	[1]109	3	11
1920	80	10	89	5	56	10	10	1¼	11	2	7	1¼	[1]109	3	11
1921	71	6	52	2	34	2	8	11¼	6	6¼	4	3¼	[1]109	3	11
1922	47	10	40	1	29	1	5	11¾	5	0	3	7½	[1]109	3	11

[1] The Septennial Average Price of British Corn, for the seven years ended 1835, upon which the amount of Tithe Rent-charge was calculated, was for Wheat 7*s.* 0¼*d.*, for Barley 3*s.* 11½*d.*, and for Oats 2*s.* 9*d.*, per Imperial Bushel. The Tithe Act, 1918, fixes the value of Tithe Rent charge up to the year 1925 inclusive, at the sum payable in 1918, *i.e.*, the value based on the septennial averages for the period ended 1917.

NOTES, COMMUNICATIONS AND REVIEWS.

Government Inquiries into Agriculture. In the closing days of the year the Government has taken steps to investigate certain problems in which the welfare of the agricultural industry is much involved. A Departmental Committee was set up in the Autumn by Sir Arthur Griffith-Boscawen, then Minister for Agriculture, to examine the means available for increasing the credit facilities of agriculturists, both long-term credit for the purchase of holdings and for the execution of estate improvements, and short term credit, to facilitate the conduct of the farmers' daily business.

Later, another Departmental Committee was constituted by Sir Robert Sanders, who had then succeeded Sir A. G. Boscawen at the Ministry, to inquire into the disparity in the prices received by the producer and those paid by the consumer. This disparity has been the subject of comment by farmers' organisations for some time, and it was felt that it was a serious factor in the economic situation in that it tended to reduce consumption and to increase the cost of living, and consequently, of labour.

Lastly, arising out of an important debate on Unemployment in the House of Commons, the Prime Minister decided to appoint a Tribunal of Investigation, composed of economists not directly interested in Agriculture, to examine the development of the industry in other countries, and to report as to the steps which might be taken to increase production and employment in this country.

The reports of these three bodies are awaited with much interest.

A Suggestion for Restoring the Corn-producing Properties of the Second-rate Land on the Lincolnshire Wolds.

THE loss of humus in Wold Land attracted my attention some twenty years ago, and I have been striving between times to find a solution to a most serious problem. So far as I can gather, the Wolds of our county were brought into cultivation about one hundred and fifty years ago, and by the process of paring and burning, rabbit warrens were converted into corn-producing land. Marling, the cultivation of turnips and the treading of the land by sheep, as well as the four-field shift, made Wold farming a paying concern, but now that the humus has been exhausted by artificial manures, some means must be employed to return this organic matter to the soil or rent-paying crops cannot be grown.

Is the second-rate land of the Wolds of Lincolnshire to go out of cultivation or will the production of a humus-containing sod save the situation?

After eight years' inspection and study of the growth of various seedings of pasture-land in the County of Roxburgh, where the late Mr. R. H. Elliott, with the botanical help of Mr. Hunter, of Chester, developed a seeding that has since been known as the "Clifton Park System," wild white clover has been found to be the real foundation of permanent pasture, and will, I believe, be the means of restoring the humus that the Wolds have lost.

A serious proposition is the cost of stocking the pastures. It is not necessary or even advisable to attempt in the early stages to plant more than one-fourth of the usual course of seeds with a permanent mixture. One can calculate what would be the proportion at the end of four years and cut one's coat accordingly. Look at this question anyhow you may, it will not answer where shortness of capital is a stumbling-block, as capital would gradually be invested in the soil, which in its yearly increased fertility would become the granary of the future.

Much has been said and written by "the powers that be" about the right and wrong way to treat pasture seeds after harvest and in subsequent years. An erroneous statement is often seen in print that it is injurious to stock early on account of the plants being torn up by the roots and so injuring the pasture. Nature does not allow these plants to be uprooted; when they have grown herbage they have also made roots so strong that they cannot be pulled by hand, much less drawn by the grazing of animals. It is desirable that the pastures should be allowed latitude from mid-July to the end of August during the first year's grazing. It gives the Wild White Clover an opportunity to spread, and the effect in a growing time has to be seen to be believed. Two or three weeks after the stock has been removed from the heavily grazed pasture a grass mower should be used, and two benefits will accrue; all thistles will be cut and those flower heads that have escaped the drastic grazing will be prevented from running to seed, so inimical to sweet herbage. If possible this should be done in wet weather, as the rain will enter the thistle stems, and the grass mower will stand a better chance of not being shaken to pieces on hard ground. Nothing has surprised me more than the decrease in the crop of thistles (1922); from the early stages of the war the work of eradication has been neglected on neighbouring farms, consequently seed in clouds has fallen on my adjacent acres. What the cause of this yearly decrease is, I cannot with conviction explain, but it has assumed almost unbelievable proportions. The mowing part of the 1919 seeding is not more free from these pests than that which has been grazed. Is it not probable that the close herbage, excluding the sun's rays and preventing cracks in the top soil, has crowded out not only thistles but many other noxious weeds? Atmospheric influences have as much to do with a satisfactory result as other important details, and when these are thoroughly sifted it is probable that, as in the case with corn harvests, seasons will be found to have as much to do with successful results as human assistance.

The pasture should not be mown the first season; this is far more important with permanent than temporary plants. In the latter case it will perhaps be advisable to mow, as the nitrogen introduced into the soil will be greater in quantity and so of more value than from a grazed field, for the roots of the red clovers especially will have full opportunity to exercise their functions, and nitrogen more than any other chemical constituent is what the Wolds require, with perhaps the exception of potash, but here a practical not a theoretical chemist should advise.

On the serious matter of expense, I advise all who can, to grow their own Wild White Clover Seed. Merchants have extolled the virtues of Kentish seed, but home grown is equally good and probably more suitable to the locality, and so more useful than the highly priced and well-advertised article. I also suggest drilling the dressings from the home-grown crop, if these are found on analysis to be reasonably free from weed seeds. On poor soil Wild White Clover can with difficulty be found after the corn is cut, but if other seeds are present, you may be sure the little marvel will be in attendance and only requires time and manure to come to the front, and remain the most prominent of them all. "Where I dine, I sleep," said the immortal Jorrocks, and where Wild White Clover is, there it will continue.

Some seeds will pay to be included in the mixture, especially for mowing or for grazing the first and second years, but the question of expense comes into the argument.

I am as yet somewhat in the dark as to the result of laying down land to permanent or temporary pasture, and as the seeding is at present expensive, unable to say that the result will be economic. So far as I am at present in a position to state, the following may be useful to those who wish to put down Wold land to temporary or permanent pasture, and although satisfied with the results of my own experience to date, my statements will probably cause strong controversy.

Great benefit will accrue from treading after harvest, whether by cattle, horses or sheep, except during wet weather.

Probably the seed bed is as important as the seeding. A Cambridge Roller should be used to solidify the soil, which we will presume to have been planted with barley or other corn.

A coulter drill followed by a flat roller should complete this work satisfactorily. Needless to say, the earlier the drilling, the more likelihood of a perfect plant. It cannot be too strongly emphasised that solidity is the main secret of a successful effort, and coulters in good condition are necessary to obtain the desired result.

Now I arrive at the most crucial part of the undertaking, viz. the correct seeds to use and the quantities. I have altered but may not have improved upon the seeding I used in 1919. The following was my prescription for that year, per acre:—Wild White Clover, ½ lb.; Cocksfoot, 8 lb.; Perennial Red Clover, 1 lb.; Perennial Ryegrass, 6 lb.; Chicory, 1 lb.; Timothy, 3 lb.; Crested Dogstail, ½ lb.; Trefoil, 1 lb.; Kidney Vetch, 1½ lb.; Italian Ryegrass, 3 lb.; Lucerne, 2 lb.; Alsyke, 1 lb.; Dutch White Clover, 3 lb.; Red Clover, ¼ lb.; Rough-stalked Meadow Grass, 2 lb.; Smooth-stalked Meadow Grass, 1 lb.; Sainfoin, 2 lb.

As I find that some of these seeds are not of any permanent value I now recommend the following:—Wild White Clover, 1 lb.; Cocksfoot, 8 lb.; Perennial Red Clover, 2 lb.; Perennial Ryegrass, 3 lb.; Chicory, 1 lb.; Burnet, 2 lb.; Yarrow, ⅛ lb.; Timothy, 1 lb.; Crested Dogstail, 1 lb.; Rough-stalked Meadow Grass, 1 lb.; Meadow Fescue, 1 lb.; Trefoil, 1 lb.; Meadow Foxtail, 1 lb.; Dutch White Clover, 2 lb.; Broad Red Clover, 2 lb.; Kidney Vetch (if not to be mown), 2 lb.

Cocksfoot, only second in value to Wild White Clover, must be grazed closely until the middle of July or the stems will become hard and unpalatable.

Perennial Ryegrass I dislike; it may graze better with a full plant of Wild White Clover than I give it credit for doing, but is not to be compared with Cocksfoot as a deep rooter and producer of herbage.[1]

Rough-stalked Meadow Grass should always be included in any mixture for permanent pasture. It fills up the bottom vacancies and appears more in our old grazings than the smooth-stalked variety.

Chicory, Burnet and Yarrow should not be left out of the seeding, but if the first-named is present when the plant is mown it may cause trouble, as the broad leaves are inclined to hold water during a damp hay harvest.

Perennial Red Clover is a most valuable plant. It is advisable that the seed should be guaranteed.

The remainder of the seeds mentioned in my list are useful and should be included in mixtures for Wold land.

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[1] This is contrary to common experience in other districts. Perennial rye-grass forms up to one-half of the herbage on most of the best pastures of England.—Ed.

The results of my endeavours at Hallington are for all to see, and if my experience interests any of those who have the welfare of the Wolds at heart, I shall be pleased to receive opinions and welcome ideas on any and all questions that may assist in solving this subject which I consider vital to a district over which I have ridden for more than fifty seasons.

WM. CHATTERTON.

A Short History of British Agriculture. John Orr. (Oxford University Press. Pp. 96.)

It is difficult to place this little volume ; one is inclined to think that it is intended for school purposes, partly from its limited scope and partly owing to the style in which it is written, but in the absence of a preface one is simply left to guess at its author's designs. It contrives to afford within its compass of only ninety-six pages a glance at the practice of agriculture in this country from pre-Roman to post-war times, but from the nature of the case, much that is of vital importance has been omitted, and all the events happening between 1914 and 1922 have actually been compressed into fifty-three lines. The account of social life in Anglo-Saxon and Norman times is good, but in the case of the manor one would have liked a fuller description of the actual systems of cultivation and land tenure —the words "balk," "furlong," "lammas-land," occur nowhere. The whole story of the Norman, Plantagenet and Tudor periods conveys the impression that the author owes a grudge to both Church and State. No mention is made of the evolution of the copyholder from the villein, nor is any account given of those other traces of former rural economics that have come down to us in the shape of the survivals at Laxton, Axholme, Braunton and elsewhere. Forestry, the incidence of tithe and other charges on land, questions of food supply, are all wanting. On page 48 and again on page 67 the following statement, which cannot be let pass in silence, occurs, "between 1455 and 1607 the area of land enclosed amounted to 516,673 acres." This is a quotation from A. H. Johnson's *Disappearance of the Small Landowner*, in turn derived from Professor Gay's estimate. The last named authority merely gave the figure in question as the "raised" total for the whole country, obtained from contemporary records relating to a few counties. Its error one way or another may amount to many tens of thousands of acres (as its compiler would have been the first to admit), and it should never be afforded publicity in the meticulous form in which Mr. Orr has seen fit to enframe it. Again, a minimum wage of 46*s*. 6*d*. was not fixed by the Wages Board in September, 1919, as given on page 94, but one of 46*s*. was put in force in August, 1920. The Board never sanctioned a higher rate than this 46*s.* in the case of the lower paid counties, and in September, 1919, the statutory minimum was still only 36*s.* 6*d.*—ten shillings below Mr. Orr's figure. In the account of the fens a curious mistake is found, for it was not the sea that was responsible for the state of the country, but the rivers themselves, which were unable rapidly to discharge their water owing to gradual silting. It is a pity that room was not found for a comparison between the types and methods of enclosure carried out in Tudor times and during the Napoleonic war—both are mentioned, but the vital distinctions between them are not emphasised. It is, however, easy to draw attention to omissions in what is a really small book, and it is better to turn to its good features.

The illustrations, ranging from mediæval ploughs to motor tractors, and from a portrait of Jethro Tull to a Clydesdale stallion, are excellent, but they are frequently irrelevant to letterpress, and the absence of an index makes it difficult to find one's way about. The reader constantly feels that the author knows far more about his subject than he cares to exhibit and that he wrote his book from a sense of duty, or to meet a want which he felt existed, and that he would have been far happier if he had been able to select some one period in the history of agriculture and do full justice to it. The staccato style is probably the result of this feeling of compulsion, for it grows progressively as the work proceeds, side by side with the compression of matter. If ninety-six pages was the defined limit, it would have been better to curtail some of the first chapters and devote the space thus saved to an expansion of the last two. This review is not intended to be unfavourable to a modest effort, but rather to express disappointment that an obviously well-equipped writer has been precluded by circumstances from doing justice to a subject that was never more important than at the present time. A sense of proportion in regard to current difficulties can best be acquired by reading the story of our ancestors' past struggles with economic problems, and an account of their ultimate victories is an excellent antidote to present pessimism.

The Agricultural Market Report. (Ministry of Agriculture and Fisheries. 2*d.* weekly; 10*s.* per annum.)

This official publication deserves to be wider known amongst agriculturists. Its form has been modified recently, and several new features introduced. It provides a full and complete summary of the current prices of farm live-stock and produce of every kind, fertilisers, feeding-stuffs, etc., together with reports on trading at all the more important central and provincial markets. Short notes are also included on matters of general interest to farmers, both at home and abroad.

THE CAMBRIDGE SHOW, 1922.

President: H.R.H. THE DUKE OF YORK, K.G.

BRITISH breeders generally are to be congratulated upon the very high standard of quality of the numerous exhibits of live stock of all descriptions brought together in the Royal Agricultural Society's Showyard last July. Such a wonderful exhibition was all the more remarkable in a year when there has been so serious an outbreak (the worst since 1886) of foot and mouth disease in the country.

Some figures relating to this year's show and to those held in 1840 and 1894 are tabulated below. It was the eighty-first exhibition of the whole series, the ninth to be held in the Eastern Counties, and the third to take place at Cambridge.

Year.	President of the Year.	Implements, entered.	Entries of Live Stock.	Number of persons admitted.	+ = Profit. — = Loss.
1840	5th Duke of Richmond	115	337	[No record]	— £938
1894	8th Duke of Devonshire	6,031	1,864[1]	111,658	+£1,096
1922	H.R.H. The Duke of York, K.G. .	4,866	4,200	92,352	+ £57

[1] Exhibition of Pigs abandoned.

The Cambridgeshire and Isle of Ely Agricultural Society, in view of the visit of the "Royal," gave up their own annual fixture, and their members received privileges in connection with the show similar to those enjoyed by members of the parent Society.

A site comprising 120 acres, a mile and a quarter from the town, was placed at the disposal of the Local Committee by the Master and Fellows of Trinity College. Trumpington Road formed its western boundary, Long Road its southern boundary, while on the east there were the lines of the London and North Western and Great Eastern Railways. When first decided upon, the showyard site, with the exception of some 20 acres in the vicinity of the Horse Ring, was arable land, and was only laid down to grass in the autumn of 1920. The Main Entrance buildings were erected in Trumpington Road, and a fleet of motor omnibuses during the show period provided a means of transport for visitors coming from Cambridge.

For handling exhibits of all kinds before and after the show, and for passenger traffic during the show week, the Great Eastern Railway Company constructed a special temporary station and Loading Dock in the wedge-shaped space between the L. & N.W. Railway and the Great Eastern main line immediately adjoining the showyard, which greatly facilitated the work of admission of all traffic on to the ground, implements and stock being specially consigned to the "Royal Show Dock." There was a second entrance to the ground in Long Road for the convenience of passengers arriving at this temporary station. On the down side of the line an island platform 500 ft. long and 45 ft. wide was erected, so that it was possible to deal with trains at both sides at the same time. Another platform of similar length was built on the " up " side. End-on loading docks were also provided for convenience and safety in dealing with traction engines and implements loaded on their own wheels. The figures in the following paragraph, which are taken from the *Railway Gazette,* will convey some idea of the magnitude of the special traffic involved.

During the days preceding the show, 1,233 railway wagons of all types, many conveying traction engines, agricultural machinery, implements, etc., were received. Of these, 407 were unloaded by crane power, 700 by hand labour and 126 by means of end-on docks. Cartage to the ground required 1,564 loads, representing 1,732 tons carted or trailed by G.E.R. teams, 551 tons being transferred by consignees or their agents. During the live stock period, about 40 hours of continuous high pressure, from the evening of Saturday, July 1, to the morning of Monday, July 3, the 64 special trains, and miscellaneous vehicles equal to another train, involved 1,195 vehicles, necessitating 537 dray loads and 330 float loads for transferring live stock which could not be, or was not, walked to the showyard, requiring the use of 103 horses. Not a single casualty of any kind occurred, despite the fact that much of the work was done on a dark night when it was pouring incessantly with rain, entailing great discomfort to the 434 members of the staff employed. Seventy floats and 105 trolleys were used for this traffic. Fifty-four special trains brought passengers to the Royal Show Station during the week.

Prizes offered reached the record sum of £13,800, or £400 more than at Derby. Breed Societies contributed £4,692, and £1,194 were given through the Cambridge Local Committee. In view of the distance from the recognized " homes " of the Lonk, Herdwick, Derbyshire Gritstone and Swaledale-Dales-bred sheep, classification for these breeds was omitted from the prize-sheet, but otherwise there was no change from the previous year in the breeds of stock represented at Cambridge.

A Summary Statement of Entries, Classes and Prizes at the 1894 and 1922 Meetings is given, together with the usual comparative statement.

Outstanding features were the cattle and pig sections which in respect of numbers of exhibits and breeds represented had never previously been equalled.

Poultry and Rabbits provided exhibitions of average dimensions, but the Produce entries were fewer than usual.

COMPARATIVE STATEMENT OF ENTRIES, &c., AT TWO SHOWS HELD AT CAMBRIDGE IN 1894 AND 1922.

HORSES, CATTLE AND GOATS.	1894		1922	
	Classes	Entries	Classes	Entries
HORSES :—				
Prizes .	—	*£1,872*	—	*£4,067 10s.*
Shires	11	198	11	158
Clydesdales. . .	5	29	7	44
Suffolks. . . .	11	103	12	107
Percheron . . .	—	—	7	104
Agricultural Horses	2	10	—	—
Hunters—				
Breeding Classes	7	55	10	77
Riding Classes .	—	—	6	84
Polo and Riding Ponies—				
Breeding Classes	—	—	5	22
Hack and Riding Ponies . .	—	—	3	26
Arabs	—	—	2	7
Cleveland Bays and Coach Horses .	2	15	2	3
Hackneys . . .	13	167	6	31
Hackney Ponies .	2	15	2	6
Welsh Ponies . .	—	—	3	9
Shetland Ponies .	—	—	2	10
Driving Classes .	2	25	12	100
Jumping . . .	—	—	5	165
Total for HORSES	55	617	95	953
CATTLE :—				
Prizes .	—	*£1,563*	—	*£4,728 5s.*
Shorthorn . . .	9	141	11	228
Dairy Shorthorn .	—	—	10	191
Lincolnshire Red Shorthorn . .	—	—	7	79
Hereford . . .	7	53	8	96
Devon	6	27	6	44
South Devon . .	—	—	5	38
Longhorn . . .	—	—	3	18
Sussex	6	52	5	48
Welsh	5	12	5	29
Red Poll . . .	7	60	7	93
Aberdeen-Angus .	4	33	6	67
Galloway . . .	4	11	5	11
Ayrshire . . .	2	7	3	31
Park Cattle. . .	—	—	4	21
British Friesian .	—	—	8	155
Jersey	6	151	7	160
Guernsey . . .	5	40	7	102
Kerry	3	22	5	45
Dexter	3	26	5	65
Blue Albion . .	—	—	3	26
Milk Yield . . .	1	10	13	180
Butter Test . .	1	14	2	123
Total for CATTLE .	69	659	135	1,850
GOATS :—				
Prizes .	—	—	—	*£84*
Entries .	—	—	14	61

SHEEP, PIGS, POULTRY, RABBITS AND PRODUCE.	1894		1922	
	Classes	Entries	Classes	Entries
SHEEP :—				
Prizes .	—	*£1,215*	—	*£2,048 5s.*
Oxford Down . .	5	38	5	47
Shropshire . . .	5	120	6	63
Southdown . .	5	109	6	60
Hampshire Down .	5	52	5	48
Suffolk	5	71	6	93
Dorset Down . .	—	—	3	16
Dorset Horn . .	—	—	4	10
Ryeland . . .	—	—	5	40
Kerry Hill (Wales)	—	—	4	33
Lincoln	5	37	6	58
Leicester . . .	4	23	4	33
Border Leicester .	3	17	4	31
Wensleydale . .	3	24	5	16
Somerset and Dorset Horned . . .	3	17	—	—
Lonk	2	5	—	—
Kent or Romney Marsh . . .	2	15	6	70
Cotswold . . .	4	24	4	27
Devon Long Wool.	—	—	2	4
South Devon . .	—	—	4	7
Dartmoor . . .	—	—	3	10
Exmoor Horn . .	—	—	3	7
Cheviot . . .	2	9	3	9
Herdwick . . .	2	10	—	—
Welsh Mountain .	2	9	2	10
Black Welsh Mountain . . .	—	—	2	9
Black-faced Mountain	2	8	3	14
Total for SHEEP .	59	588	95	715
PIGS :—				
Prizes .	—	—	—	*£1,707 10s.*
Large White . .	—	—	8	167
Middle White . .	—	—	8	152
Tamworth . . .	—	—	6	30
Berkshire . . .	—	—	8	131
Large Black . .	—	—	8	348
Gloucestershire Old Spots . . .	—	—	8	131
Lincolnshire Curly Coated . . .	—	—	5	38
Cumberland . .	—	—	5	25
Wessex Saddleback	—	—	8	69
Essex	—	—	6	73
Total for PIGS .	—	—	70	1,164
Total for STOCK .	183	1,864	409	4,743
POULTRY :—				
Prizes .	—	*£212*	—	*£503 6s.*
Entries .	76	705	162	1,205
RABBITS :—				
Prizes .	—	—	—	*£106 15s.*
Entries .	—	—	42	369
PRODUCE :—				
Prizes .	—	*£265*	—	*£280 10s.*
Butter . . .	3	162	6	76
Cheese[1] . . .	8	72	13	72
Cider and Perry .	4	74	3	31
Bottled Fruit and Vegetables, etc.	—	—	6	9
Jams and Preserved Fruits .	3	10	—	—
Hives and Honey	18	220	15	134
Wool	—	—	17	59
Total for PRODUCE	36	538	60	381

Grand Totals for LIVE STOCK, POULTRY, and PRODUCE.				
	1894	295 Classes	3,107 Entries	£5,433 [1] Prizes
	1922	673 Classes	6,698 Entries	£13,800 [2] Prizes

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[1] Includes £205 for Implements and £101 for Competitions.

[2] Including £300 for Horticultural Exhibition.

STATEMENT OF ENTRIES FOR THE 1922 SHOW, COMPARED WITH PREVIOUS YEARS.

Entries of Live Stock, Poultry and Produce.

	Cambridge, 1922	Derby, 1921	Darlington, 1920	Cardiff, 1919	Manchester, 1916	Nottingham, 1915	Shrewsbury, 1914.	Bristol, 1913	[2]Cambridge, 1894
Horses . . .	[1]713	[1]601	[1]714	[1]569	[1]518	[1]500	[1]819	[1]584	617
Cattle . . .	[1]1,547	[1]1,254	[1]1,175	[1]867	[1]803	[1]862	[1]1,272	[1]1,138	659
Goats . . .	[1]61	[1]68	[1]143	91	92	—	—	—	—
Sheep . . .	715	788	739	586	607	575	[1]886	736	588
Pigs . . .	1,164	902	692	389	321	360	417	394	—
Total. . .	4,200	3,613	3,463	2,502	2,341	2,297	3,394	2,852	1,864
Poultry. . .	1,205	1,219	1,476	1,383	1,519	1,286	1,373	1,436	705
Rabbits. . .	369	288	390	278	—	—	—	—	—
Produce . .	247	322	475	387	565	461	895	685	583

[1] Exclusive of Double Entries.
[2] Exhibition of Pigs abandoned owing to prevalence of Swine Fever.

Shedding in Implement Yard (in Feet).

Description of Shedding	Cambridge, 1922	Derby, 1921	Darlington, 1920	Cardiff, 1919	Manchester, 1916	Nottingham, 1915	Shrewsbury, 1914	Bristol, 1913	Cambridge, 1894
Ordinary . .	4,450	4,595	5,410	4,540	3,300	4,885	6,610	6,870	8,435
Machinery . .	4,240	5,560	5,710	4,200	1,290	2,935	3,405	3,665	2,539
Special . . . (Seeds, Models, etc.)	3,501	3,835	3,374	2,460	2,480	2,884	3,473	3,689	2,428
Total. . . [Exclusive of open ground space]	12,191	13,990	14,494	11,209	7,070	10,704	13,488	14,224	13,402
No. of Stands .	494	508	471	371	239	339	439	513	442

Admissions by Payment at Cambridge, 1922.

Day of Show	11 a.m.	1 p.m.	3 p.m.	5 p.m.	Day's total.
Tuesday (10*s.*) . . .	1,675	2,863	3,234	3,329	3,338
Wednesday (5*s.*). . .	10,344	18,848	21,352	21,838	21,880
Thursday (3*s.*) . . .	17,153	26,136	30,634	31,801	31,903
Friday (3*s.*). . . .	11,070	17,151	20,035	21,286	21,408
Saturday (2*s.*) . . .	6,029	9,327	12,505	13,739	13,823
				Total Admissions . . .	92,352

Total daily admissions at the 1922 *Show, compared with the six previous Shows and the Cambridge Show of* 1894.

Day of Show	Cambridge, 1922	Derby, 1921	Darlington, 1920	Cardiff, 1919	Manchester, 1916	Nottingham, 1915	Shrewsbury, 1914	Cambridge, 1894
First . . .	3,338	3,791	11,397	8,466	4,067	1,641	2,166	1,879
Second . .	21,880	33,979	51,479	45,096	29,145	12,321	12,566	13,152
Third . . .	31,903	33,931	52,626	68,838	36,938	30,798	19,317	17,890
Fourth. . .	21,408	31,777	40,389	36,292	40,874	26,034	39,397	63,981
Fifth . . .	13,823	22,350	27,001	33,002	38,173	33,089	14,357	14,496
	92,352	125,828	182,892	191,694	149,197	103,883	87,803	111,658[1]

[1] Including 260 admissions to Implement Yard only,

An exhibit of Honey, Hives, &c., was organized by the Cambridgeshire and District Beekeepers' Association, and demonstrations with live bees were given to visitors.

Under the auspices of the National Terrier Club an exhibition of Terriers was held in the showyard on the Thursday and Friday.

For the first time since the war, Horse-shoeing Competitions were conducted in the showyard. These were organized by the National Master Farriers' Association, and were divided as follows :—Tuesday, Surgical and Specimen shoes ; Wednesday, Hunters ; Thursday, Roadsters ; Friday, Cart Horses. In addition there was also decided the Championship of Great Britain, competitors for this distinction being required to take part in each of the four preceding classes. Lectures on the afternoons of Wednesday and Friday were followed with much interest by competitors and visitors.

An ever popular and attractive section was the Horticultural Exhibition, which was this year even larger and better than on former occasions.

When the show opened on Tuesday, July 4, which, as usual, was devoted to judging, the sky was overcast, and the weather outlook was not reassuring. Shortly before one o'clock there was a slight shower, but no inconvenience was caused to the judges till about two hours later, when there was a heavy rain for half an hour. His Royal Highness The Duke of York, who had reached Cambridge on the previous day, and was the guest of Mr. C. Adeane, the Lord Lieutenant, at Babraham, came to the show early in the forenoon. Several of the rings were visited by His Royal Highness during the progress of the judging, and, in the course of an informal tour, he inspected the Working Dairy, the Education and Forestry sections, and the South African pavilion.

Though conditions were none too favourable on the Wednesday, there was no rain till 4 p.m., but, when it did come, it was very heavy and continued without a break for the rest of the day. H.R.H. The President, accompanied by the Lord Lieutenant and Wing Commander Louis Greig, in an open car, reached the Main Entrance at 11.45 a.m. Here they were met by Sir Gilbert Greenall, Bart., the Honorary Director, who rode at the head of the procession through cheering crowds down the Avenue to the Royal Pavilion, where members of Council and the Local Committee were assembled. After a brief stay here, His Royal Highness proceeded to the large tent for the General Meeting of Governors and Members of the Society, at which he occupied the Chair. A report of the "Proceedings" appears in the Appendix.

As President, His Royal Highness entertained a small party to luncheon in the Royal Pavilion. Later, a tour of the showyard was made, during which visits were paid to the pavilion of the Ministry of Agriculture and Fisheries, and to a number of stands in the Implement department. Having also seen the exhibits of pigs and sheep, His Royal Highness proceeded to the Royal Box in the Grand Stand and witnessed the Jumping, Riding and Driving events that took place in the Large Horse Ring. The Royal party left the showground for Babraham shortly after 5 o'clock.

In the evening the Duke of York was present at the banquet in the Guildhall given by the Mayor of Cambridge. The company present numbered about 150, and included the Mayor and Deputy Mayor of Vermand (the town in France which has been "adopted" by Cambridge), who were presented to His Royal Highness. Arrangements had been made for the holding of illuminated Fêtes in the grounds of Trinity and St. John's Colleges, but the opening of these on the evening of Wednesday was marred by the continuous rain. During the night a gale swept over the showground, but with no resultant damage to the property of the Society.

On the Thursday morning there were many traces of the severity of the previous night's storm. The Mayor's tent and the large marquees of the Refreshment Contractors and the Federation of Women's Institutes were blown down and the canvas roofing of the Royal Café was ripped off. Though damage was caused to these erections, fortunately no one was injured. In a number of places pools of water were to be seen, one in front of the Royal Pavilion being of the dimensions of a small lake. The showyard fire engine was later pressed into service to pump this dry.

Following the precedent set in the year 1894, when the Society last held its Country Meeting in the University town, certain Honorary Degrees were conferred upon members of the

Council and other prominent agriculturists. On the morning of Thursday, at a special congregation at the Senate House, the Chancellor of the University, the Earl of Balfour, conferred the Degree of Doctor of Law (honoris causa) upon H.R.H. the Duke of York, K.G., Mr. C. Adeane, C.B. (Lord Lieutenant), Sir Gilbert Greenall, Bart., C.V.O. (Honorary Director of the Show), Mr. Ernest Mathews, C.V.O., Sir A. Daniel Hall, Chief Scientific Adviser to the Ministry of Agriculture and Fisheries, Mr. E. S. Beaven, and Mr. A. E. Humphries; and the degree of Master of Arts (honoris causa) upon the Mayor of Cambridge (Councillor G. P. Hawkins).

At the same time Mr. W. H. Taft, ex-President of the United States of America, received the honorary LL.D. degree.

An imposing assembly of famous and learned men was gathered for the ceremony, some of whom remembered the conferment of degrees in the year 1894 and the words of the Public Orator on that occasion.

The honours were conferred in the following order:—

THE DUKE OF YORK.

Two hundred years ago, at the end of June, said the Orator, the foundations of this Senate House were laid, and the munificence of both George I. and George II. had contributed to its building. After two hundred years we have with us a Prince of the same house, and we are glad to greet in him a fellow student. We remember that twenty-eight years ago another Duke of York came to Cambridge for the same cause—to visit the Royal Agricultural Society and received the Degree of Doctor in this place. Our Duke—if we may properly call him ours, when he has given himself to the whole nation—lives, as we read every day in the Press, like his father and grandfather, a life of toil and thought for the people. We hope that in Cambridge, at least, he feels free from toil and anxiety, and is here with pleasure and freedom of mind. In the hope that he may re-visit us and play a larger part in University life, that he may feel himself more than ever a Cambridge man, we have sought that he too may be created Doctor. The Senate and the Prince are of one mind: a Doctor he will be.

MR. W. H. TAFT.

In presenting Mr. William Howard Taft, the Orator said Mr. Taft was a Yale man; he had been appointed to govern the Philippine Islands after their acquisition, and had been the author there of quiet and culture. He had been called by the suffrages of the American people to their highest magistracy. After four years he left the White House and returned to Yale, where he was Professor of Law till created Chief Justice of the Supreme Court of the United States, a worthy successor of John Marshall. America has always been happy in her sons, but there is no man living whom Americans regard with more affection or more trust. A man of kind and genial nature, proved in public and in private life, he has won the affection of all. But (in Plato's phrase) he had always contemplated the whole world and had a nature equal to grasping it entire—a man who would not set his party before his country, nor in devotion to his country forget humanity. To-day it was his hope to have a part in bringing peace and culture, not to those distant islands only, but to mankind worn out and wellnigh desperate ; it was his hope to see the human race, united in fellowship (whether by some treaty, formal pact, or pure friendship), regain health and sanity, and with God's blessing pursue the purposes of God, and achieve a larger life.

THE LORD LIEUTENANT.

Mr. Charles Robert Whorwood Adeane, the Orator said, is an Oxford man, well known to us in Cambridge, Lord Lieutenant of the County, a breeder of pedigree sheep and shorthorns, much interested in their protection against tuberculosis. When appointed Treasurer of the Royal Agricultural Society he found it greatly in debt, and by good management he had wiped out the debt and acquired a balance in hand. He was much interested in the training of Militia.

SIR GILBERT GREENALL.

Sir Gilbert Greenall is a great believer in practice and experience—a farmer, a hunter, a lover of dogs and horses, a first-rate judge of cattle. A man intolerant of dirty farming, he keeps his own farms like gardens, and combines use with beauty. A tyrant of the type of Pisistratus, the Royal Society accepts him as a benevolent despot.

SIR ALFRED DANIEL HALL.

Sir Alfred Daniel Hall has had a large part in administering the funds set apart by Government for the development of scientific education in agriculture. He has an intimate knowledge of the English countryside, the roads and the villages, the geology and the history. Proof of this is to be found in his book, in which he, like a modern Cobbett, has told of his rural rides. He is a capital speaker, a lover of gardens—of tulips in particular—a devotee of Oriental art, of Japanese prints and Chinese porcelain.

MR. E. SLOPER BEAVEN.

Mr. Edwin Sloper Beaven stands out to-day like an Athanasius of self-help against a world of Government control. Whether God or barley be a man's chief interest, he holds a man's soul was given him to be his own; he was created a man to live like a man. Mr. Beaven has concentrated on barley and given the country two new varieties; he is devoted, moreover, to the history of barley, and believes that it was the first of cultivated cereals, that as Alpha was the first Greek letter, alphita was the first Greek grain. Whether on a motor-car or sowing barley, he believes in action—an eminently fit person in every way to be made a Doctor.

MR. A. E. HUMPHRIES.

Mr. Albert Edward Humphries has shown that the superior value of Canadian grown wheat (supposed to be of Galician origin) was not beyond the English farmer's reach; the wheat did not need the Canadian climate, it could be grown to advantage in England. He is an expert in milling, and a great believer in Professor Biffen's work and in the application of science to agriculture. His only recreations are music and hard work.

MR. ERNEST MATHEWS.

Mr. Ernest Mathews has not R. L. Stevenson's admiration for "the friendly cow, all red and white." He may share the poet's enthusiasm for a cow, but it is for a cow of another colour; the Jersey is a much better variety. Butter and cheese are his province and the machinery for making them. He, too, is a lover of music in church and home. He played cricket long ago for Oxford against Cambridge.

THE MAYOR OF CAMBRIDGE.

Mr. Hawkins in his former Mayoralty invited the Royal Society to Cambridge, and was elected again to entertain them on their visit. Well known in Cambridge, he needs no commendation. He, too, had an interest in farming, and for his civic-mindedness and energy, all his friends concurred in honouring him.

On Thursday evening, the Master and Fellows of Trinity College invited the Members of Council of the Society to dinner in the College Hall to meet the recipients of the degrees.

Friday opened with brilliant sunshine, but before one o'clock there was heavy rain, and showers came intermittently for the rest of the day.

On the closing day, Saturday, there was not much rain till the afternoon, but between four and five o'clock a downpour began which never ceased until after the close of the show, the Showyard consequently having a very deserted appearance during the later part of the day.

The prices of admission this year were, with the exception of the third day (three shillings instead of five shillings), the same as at Derby. As will be seen from the comparative tables, the total admissions for the five days at Cambridge were 92,352. In spite of the unfavourable conditions, the 1922 show, so successful from the point of view of exhibits, was not unsuccessful financially, the accounts showing a balance of receipts over expenditure amounting to £57.

In concluding this brief notice, due acknowledgment must be made to the Cambridge Local Committee, especially to the Mayor (Councillor G. P. Hawkins) for the invaluable assistance rendered by them which so materially ensured the success of the Show.

T. B. TURNER.

16 Bedford Square,
London, W.C.

MISCELLANEOUS IMPLEMENTS EXHIBITED AT THE CAMBRIDGE SHOW.

THE number of entries of new implements at Cambridge was 82 as against 64 and 73 in the two previous years. Of these 82, five did not put in an appearance.

Six medals were awarded by the judges, but it is becoming increasingly difficult to justify the bestowal of the Society's Silver Medal because progress naturally slows down in proportion as a higher level is reached. It was considered, however, that though there may be a great difference between the merits of new implements in any two years, still it would be unwise to discourage in any way the inventive genius of our manufacturers by withholding medals from implements which, though not exhibiting any very radical improvement, are still in advance of previous practice.

It is possible that your judges next year may think it advisable to steepen the gradient up which the exhibitors have to climb to attain that coveted prize—the Society's Silver Medal.

The outstanding question this year seems to be that of subsoiling. It does not lie within the province of the judges to say whether this is a universally good practice or not, but they would like to acknowledge the readiness and resource of our implement manufacturers to meet the demand for ploughs to do this work—a demand which seems to be very general.

One of the medals was given to a conversion set which enables a farmer at a small cost to attach a subsoiling tine to his existing plough, so that he may readily inform himself by actual experiment whether to go in for this form of cultivation or not.

Taken as a whole, the exhibits show only minor improvements and nothing of very special merit.

Taken in their catalogue order the first medal was given to No. 697, *Motes' Hand Plough,* exhibited by Mote's, Ltd., Palace Chambers, Westminster, London, S.W.1.

This is a hand plough for small-holders or market gardeners.

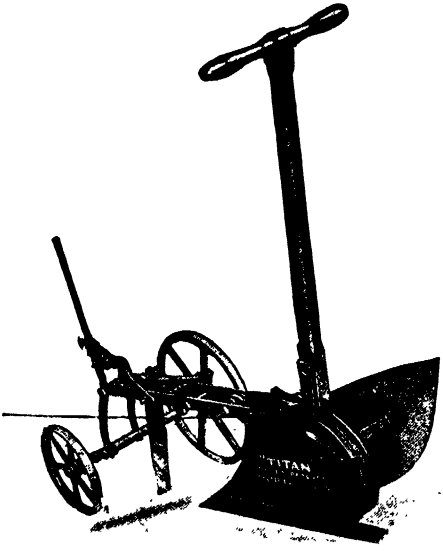

Fig. 1.—Mote's Hand Plough.

The novelty consists in the utilisation of a ratchet-windlass incorporated in the plough pulling on a wire-rope to draw it along; the handle of the windlass being the handle of the plough itself. The principle is exactly that of the old ratchet-windlass of the sailing-boat, the plough being the boat drawn up to its anchor, turning over the furrow at its bow.

On commencing operations, a wire-rope, coiled on the windlass behind the plough-breast, is led forward to where the furrow will end and anchored there to a piece of wood with a couple of pegs driven into the ground behind it, so that the point of attachment can be moved along for each furrow. The ratchet-drum is now actuated by working the handle up and down, winding up the rope and pulling the plough through the soil. The handle offers a ready means of controlling the action. The work done in hard ground was good.

The next is No. 2121, Martin's Cultivator Co., Ltd., Stamford, *Combined Swath-turner and Side-delivery Rake.*

This implement is of the type where a series of parallel bars are worked from two wheels, like the coupling rods of a locomotive engine, and working across the direction in which the machine is travelling. In this case the bars are cranked; each bar when viewed in plan being like the conventional representation of a flash of lightning. The tines are of flat section with the edge leading, instead of the usual round pattern; consequently they stand up stiffer to their work and are perhaps stronger.

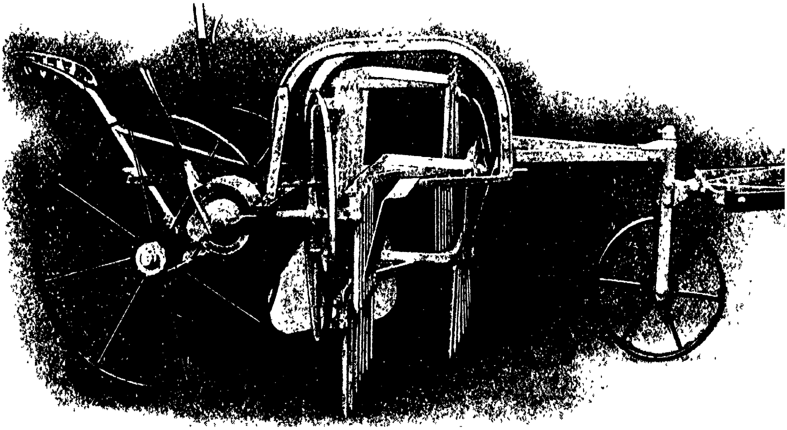

FIG. 2.—Combined Swath Turner and Side-delivery Rake.

Suppose your right-hand of the crank-bar is leading, if you revolve it right-handed you will rake and turn your swath in two rows; revolve it the other way and your right-hand half of the bar turns the swath in front of the left-hand half, which then turns the two and delivers at the side. The gearing works in very well to give a faster speed for the side-delivery.

The third medal was awarded to No. 2602, W. N. Nicholson & Sons, Newark-on-Trent, for *Three-Row Ridger with Patent Steering-gear.*

In this machine there are three ridging ploughs easily adjustable for centres. Each breast is capable of swiveling round its centre of effort and the whole can be steered from the handles at the rear by slewing to the right or left, as inside the breast of each ridger runs a wheel, which can be lowered for travelling.

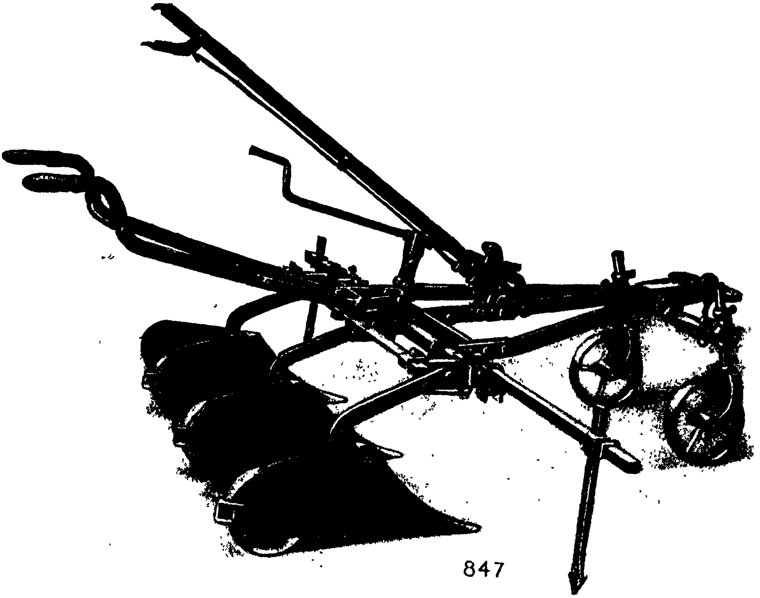

FIG. 3.—Three-Row Ridger, with Patent Steering Gear.

On trial the implement showed itself capable of being easily steered, although the ground was not suitable for its use.

The next exhibit to receive a medal was No. 3426, *Watson's Draw-bar Dynamometer.* H. G. Burford & Co., 16, Regent Street, London, W.1.

This machine is more for the use of a technical engineer than the ordinary farmer, and it was of the greatest service in the tractor trials of 1920 and 1921, for by it the tractive effort of all the competing machines was ascertained. It is placed between the tractor and its work. By means of spring-loaded pistons working in oil cylinders, pens are actuated which record on a roll of paper moving in proportion to the distance travelled: (1) the pull on the draw-bar; (2) the distance travelled; and in the case of a plough, (3) the depth of the furrow and the time taken.

It is unnecessary to go into further mechanical details, which are of a highly technical character, but as an instance of what it

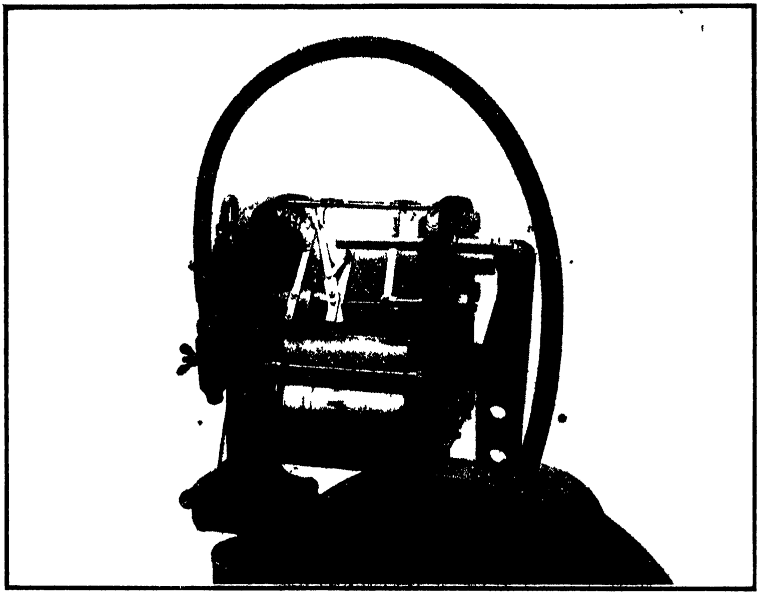

FIG 4.—Watson's Draw-bar Dynamometer.

Rolling Resistance Tests made at Shrawardine.

September 24, 1921.

Tractor No.	Total weight (tons)	Speed feet per minute	Average total resistance for two tests (lb.)	Average resistance per ton (lb)
1	1·41	158	490·5	348
2	2·44	151	556·5	228
3	3·16	160	611·5	193
4	1·62	163	482	296
5	2·71	174	598·5	220
6	1·31	173	461	352
7	1·8	160	880	488
8	1·81	186	389	215
9	2·18	172	593·5	272
10	2·0	161	430·5	216
11	2·66	146	936	351
12	1·43	171	377	258
13	3·02	160	736·5	243

can tell the farmer about the resistance of tractors, thirteen different makes were lately tested to ascertain what it took to pull them along with all their gears in mesh but without the engine running. A table giving the results is appended. Probably in the future the farmer will have his implements "vetted" for draw-bar-pull before buying, and makers may sell their machines on the same basis.

The next implement is No. 3583. E. & H. Roberts, Stony Stratford. *Plough with Patent Breast or Mouldboard.*

The merits of this invention lie not in the plough, which is of a conventional design, but in the plough-breast and the means of attaching it. The breast is made of glass-hard steel and is attached to the plough, without the use of any bolts and nuts, by means of small eccentrics acting like wedges. The wear should be longer than that of an ordinary breast with soft centre, and it can be changed for a new one in a very few moments.

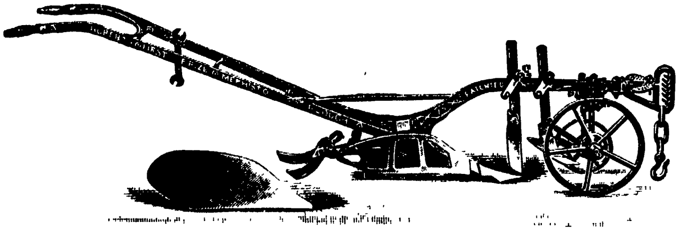

Fig. 5.—Plough with Patent Breast or Mouldboard.

The last implement to receive a medal is No. 4156. S. C. Darby, Wickford, Essex. *Subsoiling Conversion Set.*

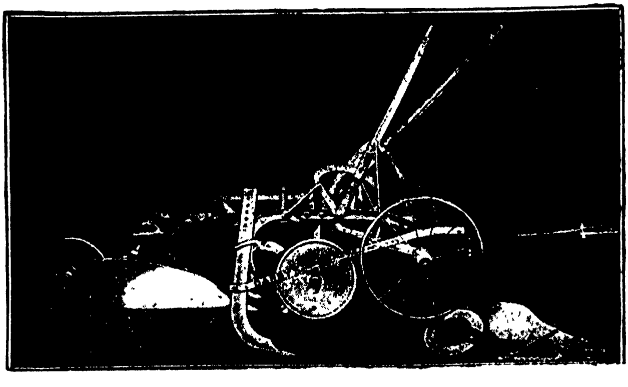

Fig. 6.—Subsoiling Conversion Set.

At a cost of £7 15*s.* any of the standard ploughs can be converted to a subsoiling implement, which enables a farmer to try the effect upon his farm of this practice before buying any of the numerous more elaborate subsoil-ploughs now on the market. The set consists of a subsoiling tine to take the place of one of the mouldboards of a double-furrow plough (tractor or horse-drawn), with an auxiliary furrow-wheel to maintain an even depth of work for the subsoiling tine, an extension of the furrow-wheel arm to provide additional lift for the subsoil tine, an extension bushing for the land-wheel to adjust the balance, and the necessary stays, shackles, &c., &c.

Turning now to the remaining entries for new implements that did not receive a Silver Medal. No. 2085, R. Hunt & Co., Earls Colne, show a combined crushing and grinding mill, a very carefully designed machine in which the mill-spindle is separated from the crushing-spindle. The gears are machine-cut and run very silently.

Messrs. Ransomes, Sims & Jefferies show a Lorry Conversion Attachment, by means of which a lorry can be converted into a six-wheeled vehicle, by the addition of a two-wheeled trailer to its rear and a fixed swiveling bolster on the lorry and a sliding swiveling bolster on the trailer. On these two is placed the long body of the wagon.

It must be confessed that makers of heavy vehicles seem to be more expert in devising something that will destroy the roads than the road builders are in devising something to carry the ever-increasing rolling weights now put upon them. It is possible that the solution of the heavy-weight-on-ordinary-roads problem may be in a different direction, and probably next year's show will see something in that line.

E. H. Bentall & Co., Ltd., Heybridge, Maldon, show a grinder which is entirely constructed—except, of course, the actual working parts—of cement-concrete. This, by its weight, should insure solid vibrationless running, but again its weight may cost more for carriage, this being so large an item in these days. The use of cement-concrete for such a job is very interesting.

W. & T. Avery, of Birmingham, show a movable Cattle-Weighing Machine. The levers are overhead, and it is very well made, as are all the products of this firm, but one wonders whether it is easier to take Mahommed to the mountain or the mountain to Mahommed.

Alfred Dugdale & Co., Conduit Street, London, No. 3388, show a Mowing Attachment for a Ford Tractor. The box at the end of the worm-shaft is removed and a chain sprocket-wheel mounted on the shaft, another shaft is carried forward which works the knives which project from the side of the tractor, and can be raised or lowered from the seat in the usual way. This attachment should prove useful on flat ground, but the want of a brake on the Fordson Tractor renders a Fordson, even without any attachment, difficult to manage on hilly ground. At the same time, anything that enables a machine to be used continuously throughout the year tends to reduce interest, depreciation, and overhead charges.

Messrs. Boulton & Paul exhibit several of their Carnelle Water Elevators. A noticeable improvement is in the lifting chain, which is really a double endless band, the space between being divided into cells of such size and width that the water remains in them by capillary attraction. A good illustration of this action is seen when the honeycomb radiator of a car is washed down—water will be seen in the openings, being retained by capillary attraction.

The National Gas Engine Company show a Portable Suction-Gas Plant that consumes small pieces of wood. It is constructed to burn the tar produced.

John Fowler & Co., Leeds, No. 872, Steam Plough. Whilst the additions of a tine behind the furrow-wheel and a subsoiling tine on the main frame are improvements, they were not, in our opinion, sufficient to merit a Silver Medal.

G. Llewellin & Son, No. 1520, Churn. A distinct improvement in having a hinge on the lid so that it need not be lifted off entirely.

Other exhibits showing commendable improvements were :—

No. 2598, Geo. Stephenson & Sons, Ltd., Hay Press—leverage.

No. 2605, W. N. Nicholson & Sons, Tractor Cultivator—spring tine.

No. 3510, Innes, Sons & King, Ltd., Motor Baling Press—light 2-man outfit.

Nos. 447 and 448, Venn Car, Ltd., Poultry-Feeding Appliances.

The judges have, as usual, to tender their grateful thanks to the Steward and the Society's Engineer for the admirable arrangements which rendered their task so easy and pleasant.

HARRY W. BUDDICOM.

Penbedw, Nannerch,
North Wales.

REPORT OF THE STEWARD OF DAIRYING, CAMBRIDGE SHOW, 1922.

MILK YIELD TRIALS (CATTLE, CLASSES 210 to 222).

THE number of cattle entered for these trials (180) constituted a record, but, owing to isolated cases of Foot and Mouth Disease in certain districts, many animals were not forthcoming, the cattle actually competing being reduced to 109.

Seven cows failed to give milk showing 3 per cent. fat, but it is satisfactory to note that the Shorthorns and Non-Pedigree Shorthorns all passed the standard, and showed an average of 3·97 per cent. and 3·88 per cent. respectively

The Ayrshires were a particularly good lot.

With the exception of the Channel Islanders, it will be seen that the cows were in almost every instance freshly calved.

For the first time, the cattle in these classes were weighed, and it is instructive to compare the yields of milk with their live weights. The Champion Prizes offered at Darlington and Derby were again most generously given, the results being as follows :—

A.—*For Cows of the Dairy Shorthorn, Lincolnshire Red Shorthorn, Devon, South Devon, Longhorn, Red Poll, and British Friesian Breeds.*

Champion Prize, £30.—1036 Major S. F. Yates' Dairy Shorthorn, **Fair Rosamund.**

Reserve Number, £5.—1784 W. & R. Wallace's British Friesian, **Inwood Garnet.**

B.—*For Cows of the Ayrshire, Jersey and Guernsey Breeds.*

Champion Prize, £20.—1682 Jacob S. Murray's Ayrshire, **Carston Cinderella 2nd.**

Reserve Number, £5.—1898 S. G. Asher's Jersey, **Dainty.**

C.—*For Cows of the Kerry and Dexter Breeds.*

Champion Prize, £10.—2150 Capt. Nelson Zambra's and C. W. Milnes' Kerry, **Castlelough Nina.**

Reserve Number, £5.—2140 Miss P. de B. F. Bowen-Colthurst's Kerry, **Castlelough Connie.**

Table I. gives a full report of the trials, with the awards in each Class, while Table II. shows the average results of each breed.

TABLE I.—MILK-YIELD CLASSES AT CAMBRIDGE, 1922.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours		Fat per-cent-age	Points				Awards and Remarks
										Milk	Fat per-cent. × 4	Lacta-tion	Total	
Class 210		*Dairy Shorthorns.*		1922			Lb.	oz.						
1028	Sir Wm. Hicking, Bt.	Watercrook Cress . . .	June 3, 1914	Apr. 29	68	—	24	4	3·60	24·25	14·40	2·80	41·45	—
1029	Thos. L. Martin. .	Rose Blush 3rd	Apr. 13, 1913	June 8	28	—	33	8	4·35	33·50	17·40	Nil	50·90	—
1030	J. Pierpont Morgan	Cockerham Barrington 2nd	June 30, 1914	May 13	54		43	0	4·65	43·00	18·60	1·40	63·00	H.C.
1032	J. M. Strickland. .	Keyingham Dairymaid 5th	Jan. 2, 1913	May 27	40	—	72	8	3·20	72·50	12·80	Nil	85·30	Second.
1036	Major S. P. Yates .	Fair Rosamund . . .	Sept. 1, 1910	June 9	27	—	70	8	3·92	70·50	15·68	Nil	86·18	First and Champion
						—								£30.
1042	Chivers & Sons, Ltd.	Histon Wild Queen . .	Sept. 2, 1917	May 11	56	—	57	8	3·22	57·50	12·88	1·60	71·98	Third
1046	Sir Wm. Hicking, Bt.	Ruby Rosette	Jan. 27, 1917	May 27	40	—	40	0	3·35	40·00	13·40	Nil	53·40	—
1053	Alfred Palmer . .	Wokefield Cowslip 3rd . .	Oct. 23, 1917	Apr. 2	95	—	46	8	3·50	46·50	14·00	5·50	66·00	H.C.
1054	Lt.-Col. W. M. Pryor	Betty 24th	Sept. 25, 1917	May 5	62	—	48	12	4·00	48·75	16·00	2·20	66·95	H.C.
1058	Duke of Westminster	Katie	May 3, 1917	June 9	27	—	51	4	3·07	51·25	12·28	Nil	63·53	H.C.
1060	Capt. Arnold S. Wills	Thornby Foggathorpe 7th .	June 3, 1917	June 1	35	—	34	12	5·55	34·75	22·20	Nil	56·95	—
1075	J. Pierpont Morgan.	Newlands Dainty 6th . .	Apr. 26, 1918	May 30	37	—	31	8	5·00	31·50	20·00	Nil	51·50	—
1112	J. Pierpont Morgan.	Rickerscote Rosannah . .	Jan. 25, 1919	June 3	33	—	27	8	4·27	27·50	17·08	Nil	44·58	—
Class 211		*Non-Pedigree Dairy Shorthorns.*												
1128	James Batten . .	Stella	Unknown	Apr. 25	72	—	67	4	3·12	67·25	12·48	3·20	82·93	First
1129	Charles J. Beechener	Faldo Queen	Aug. 29, 1917	June 18	18	—	51	0	3·65	51·00	14·60	Nil	65·60	Third
1131	J. L. Shirley. . .	Graceful	Unknown	May 14	53	—	59	12	4·87	59·75	19·48	1·30	80·53	Second
Class 212		*Lincoln Red Shorthorns.*												
1169	Stanley Blundell .	Bendish Ada 2nd . . .	Nov. 18, 1914	May 23	44	—	68	0	3·15	68·00	12·60	·40	81·00	First.
1171	Stanley Blundell .	Bendish Cherry 2nd . .	June 1, 1915	June 3	33	—	59	0	3·40	59·00	13·60	Nil	72·6	Second.
1173	John Evens & Son .	Burton Diligent . . .	Oct. 1917	May 28	39	—	35	12	4·05	35·75	16·20	Nil	51·95	—
1179	Charles E. Scorer. .	Bracebridge No. 61. . .	Dec. 16, 1916	May 25	42	—	51	4	2·82	51·25	11·28	·20	62·73	Fat below Standard.
1180	Charles E. Scorer .	Sudbrook No. 125c . .	May 9, 1914	May 29	38	—	48	0	3·45	48·00	13·80	Nil	61·80	—
1181	Lt.-Col. Sir A. G. Weigall	Petwood Ella	Apr. 13, 1917	June 17	19	—	31	4	4·67	31·25	18·68	Nil	49·93	—
1182	Lt.-Col. Sir A. G. Weigall	Ranby Lucy 2nd . . .	Unknown	May 11	56	—	52	8	3·10	52·50	12·40	1·60	66·50	Third.
Class 213		*Devons.*												
1328	W. G. Busk . . .	Suffragette 1st	Feb. 1, 1913	May 28	39	—	50	4	3·55	50·25	14·20	Nil	64·45	Third
1330	W. G. Busk . . .	Wraxall Bluebell . . .	1915	Apr. 13	84	June 29	52	4	3·37	52·25	13·48	4·40	70·13	First.
1332	J. H. Chick . . .	Wynford Broad . . .	Mar. 15, 1918	May 3	64	—	32	0	4·45	32·00	17·80	2·40	52·20	H.C.
1333	J. H. Chick . . .	Wynford Pill	July 23, 1913	May 14	53	—	51	4	4·20	51·25	16·80	1·30	69·35	Second.

Table I.—MILK-YIELD CLASSES at CAMBRIDGE, 1922—*continued.*

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours		Fat percentage	Points				Awards and Remarks
										Milk	Fat per cent. × 4	Lactation	Total	
Class 214		*South Devons.*		1922			Lb.	oz.						
1366	Walter Hunt	Cherry	Mar. 4, 1913	June 6	30	—	46	12	3·70	46·75	14·80	Nil	61·55	—
1373	George Wills	Charm 3rd	Apr. 12, 1915	May 1	66	June 19	39	12	4·52	39·75	18·08	2·60	60·43	— No award
1374	George Wills	Dainty	Aug. 6, 1915	Apr. 25	72	June 5	31	12	6·60	31·75	26·40	3·20	61·35	—
Class 215		*Longhorns.*												
1398	W. Hanson Sale	Arden Cinderella	June 17, 1916	May 5	62	—	40	12	4·05	40·75	16·20	2·20	59·15	First.
Class 216		*Red Polls.*												
1521	Sir Merrik Burrell	Miss Sybil 13th	Sept. 30, 1911	May 4	63	—	42	8	3·19	42·50	12·76	2·30	57·56	—
1523	Sir Merrik Burrell	Sudbourne Minerva	Nov. 20, 1913	Feb. 1	155	—	54	12	3·70	54·75	14·80	Nil	69·55	First.
1526	Viscount Folkestone	Longford Ruby	Aug. 19, 1915	May 28	39	—	47	8	2·92	47·50	11·68	Nil	59·18	Fat below Standard.
1531	Major J. A. Morrison	Brightwell Clinker	Jan. 1, 1913	Apr. 3	94	June 14	32	4	3·85	32·25	15·40	5·40	53·05	
1532	Major J. A. Morrison	Kettleborough Rosie 2 C	Jan. 17, 1912	June 4	32	—	41	4	2·77	41·25	11·08	Nil	52·33	Fat below Standard.
Class 217		*Ayrshires*												
1666	Thomas Barr	Hobsland Ella 3rd	Jan., 1915	June 10	26	—	46	4	3·90	46·25	15·60	Nil	61·85	—
1667	Thomas Barr	Westburn Miss Gray	Apr., 1916	Apr. 9	88	June 7	46	8	3·42	46·50	13·68	4·80	44·98	—
1672	Wm. L. Ferguson	Edingham Belinda	Feb., 1915	June 18	18	—	40	4	3·60	40·25	14·40	Nil	54·65	—
1673	Wm. Gibson	Moorside Amelia	May 18, 1917	Apr. 30	67	—	45	4	3·82	45·25	15·28	2·70	63·23	H.C.
1674	Wm. Gibson	Moorside Arietta	Jan. 2, 1918	June 19	18	—	41	0	3·00	41·00	12·00	Nil	53·00	H.C.
1675	Wm. Howie	Meikle Kilmory Marguerite	July 15, 1914	June 7	29	—	41	12	3·75	41·75	15·00	Nil	56·75	—
1676	Wm. Howie	Moss Rose 2nd	Apr. 17, 1915	June 12	24	—	45	12	4·00	45·75	16·00	Nil	61·75	H.C.
1680	A. & A. Kirkpatrick	Barr Amelia	Apr. 2, 1916	May 10	57	—	47	12	3·97	47·75	15·88	1·70	65·23	Third.
1682	Jacob S. Murray	Carston Cinderella 2nd	June, 1912	June 4	32	—	64	4	3·72	64·25	14·88	Nil	79·13	First & Champion Prize £20.
1683	Thomas Simpson	Haynes Snowdrop	Sept. 10, 1916	Mar. 5	123	May 4	47	8	3·55	47·50	14·20	8·30	70·00	Second.
1684	Thomas Simpson	Haynes Snowdrop 2nd	Apr. 29, 1919	June 12	24	—	43	8	3·10	43·50	12·40	Nil	55·90	H.C.
1686	Sir Hugh Shaw Stewart, Bt.	Ardgowan Girl Queen	July 11, 1915	May 10	57	—	42	0	3·47	42·00	13·88	1·70	57·88	—
Class 218		*British Friesian*												
1760	A. & J. Brown	Hedges Gracious Dutch	July 3, 1916	June 8	28	—	58	12	3·72	58·75	14·88	Nil	73·63	H.C.
1761	Wm. H. Case	Elmham Hetty 2nd	Oct. 11, 1915	June 9	27	—	64	4	2·95	64·25	11·80	Nil	76·05	Fat below Standard.
1764	Ethelbert Furness	Hedges Familiar 2nd	Feb. 16, 1918	Apr. 6	91	—	60	8	2·87	60·50	11·48	5·00	76·98	Fat below Standard.
1771	G. Holt Thomas	Kingswood Myrtle Leaf	Nov. 10, 1916	Mar. 3	125	June 19	59	0	4·02	59·00	16·08	8·00	83·08	Second.
1780	James Russel	Sparrowyke Desire	Sept. 6, 1916	Apr. 29	68	—	61	8	3·45	61·50	13·80	2·80	78·10	Third.
1781	James Russel	Zuider Lilian	July 1, 1915	Apr. 27	70	—	47	4	4·55	47·25	18·20	3·00	68·45	H.C.
1782	W. & R. Wallace	Bladen Gillian	Jan. 29, 1916	May 1	66	—	44	0	2·70	44·00	10·80	2·60	57·40	Fat below Standard.
1783	W. & R. Wallace	Knebworth Empress 2nd	Dec. 14, 1914	May 14	53	—	34	4	3·07	34·25	12·28	1·30	47·83	—
1784	W. & R. Wallace	Inwood Garnet	June 27, 1917	Apr. 19	78	May 24	69	8	3·05	69·50	12·20	3·80	85·50	First and R.N. for Champion £5.

Table I.—MILK-YIELD CLASSES at CAMBRIDGE, 1922—*continued.*

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours		Fat per-centage	Points				Awards and Remarks
										Milk	Fat per-cent. x 4	Lacta-tion	Total	
Class 219		*Jerseys*		1922			Lb.	oz.						
1898	S. G. Asher . . .	Dainty	Jan. 14, 1914	Jan. 20	167	April 6	38	2	6·92	38·12	27·68	12·00	77·80	First & R.N. for Champion £5.
1899	S. G. Asher . . .	Petunes Princess . . .	Jan. 6, 1917	Mar. 23	105	June 13	38	14	4·52	38·87	18·08	6·50	63·45	H.C.
1900	Mrs. G. J. Austin .	Era	Feb. 3, 1917	Mar. 12	116	June 28	30	10	4·30	30·62	17·20	7·60	55·42	—
1901	Mrs. G. J. Austin .	Jersey Beauty 2nd . .	Feb. 2, 1917	Feb. 28	128	June 12	33	0	5·05	33·00	20·20	8·00	61·20	H.C.
1902	Grosvenor Berry .	Nimrod's Dinah 4th . .	Sept. 11, 1915	May 7	60	July 2	52	10	4·22	52·62	16·88	2·00	71·50	H.C.
1903	Grosvenor Berry .	Postage 2nd	Apr. 18, 1918	Jan. 23	164	April 13	42	0	3·52	42·00	14·08	12·00	68·08	H.C.
1904	Alfred E. Bond . .	Frontieres Maid . . .	Feb. 7, 1917	May 2	65	June 26	31	8	3·70	31·50	14·80	2·50	48·80	—
1905	R. W. Carson . .	Ledas Chablis	July 20, 1916	Apr. 1	96	June 22	36	0	4·02	36·00	16·08	5·60	57·68	—
1907	R. W. Carson . .	Lynns Fern Lady 2nd . .	Apr., 1917	May 28	39	—	29	0	5·00	29·00	20·00	Nil	49·00	—
1908	R. W. Carson . .	Noble Origa's Queen . .	Oct. 26, 1912	May 9	58	—	35	12	3·92	35·75	15·68	1·80	53·23	—
1910	Mrs. Evelyn . .	Fairlawne Hussy . . .	Aug. 8, 1916	Feb. 6	150	April 5	45	8	4·52	45·50	18·08	11·00	74·58	Second.
1911	Mrs. Evelyn . .	Wotton Pink May . . .	July 25, 1916	Apr. 15	82	June 28	43	8	4·00	43·50	16·00	4·20	63·70	H.C.
1912	Col. L. G. Gisborne	Distressed Lady . . .	Apr. 26, 1915	Apr. 4	93	June 29	37	12	3·95	37·75	15·80	5·30	58·85	H.C.
1913	Col. L. G. Gisborne	Sweet Bread 46th . . .	Nov. 3, 1917	June 18	18	—	34	8	4·50	34·50	18·00	Nil	52·50	H.C.
1920	Major the Hon. Harold Pearson	Amira's Pride's Miss . .	July 7, 1916	May 18	47	—	36	0	4·30	36·00	17·20	·70	53·90	—
1925	Lord Roundway .	Mill Maid 5th	May 4, 1912	Feb. 26	130	April 29	28	8	4·60	28·50	18·40	9·00	55·90	—
1927	Mrs. Rudd . . .	Fire King's Tidy . . .	May 2, 1918	Feb. 1	155	April 13	45	10	3·67	45·62	14·68	11·50	71·80	Third.
1928	Hon. Mrs. Murray Smith	Vixen	Dec. 20, 1918	Mar. 23	105	June 7	24	14	4·45	24·87	17·80	6·50	49·17	—
1930	Hon. Mrs. Tennant	Ambrosia	June 12, 1914	Dec. 19	199	Mar. 7	30	8	3·37	30·50	13·48	12·00	55·98	—
1931	Laurence E. Tubbs	Stapleton Mollie . . .	Oct. 2, 1917	May 4	63	—	18	0	5·87	18·00	23·48	2·30	43·78	—
1932	R. Bruce Ward . .	Elfrida	June 26, 1917	Apr. 18	79	—	38	0	4·10	38·00	16·40	3·90	58·30	H.C.
1933	R. Bruce Ward . .	Evergreen	Sept. 4. 1916	May 8	59	—	42	2	4·27	42·12	17·08	1·90	61·10	H.C.
1934	R. Bruce Ward . .	Ida	Mar. 15, 1914	Mar. 29	99	June 12	29	4	4·42	29·25	17·68	5·90	52·83	—
1935	Sir G. Stanley White	Freesia of Hollywood . .	May 22, 1917	Jan. 16	171	April 14	26	8	4·65	26·50	18·60	12·00	57·10	—
1939	Grosvenor Berry .	Taranto	Mar. 6, 1919	Apr. 17	80	June 20	38	10	4·80	38·62	19·20	4·00	61·82	H.C.
1940	Alfred E. Bond . .	Marston Lucinda . . .	June 13, 1919	May 25	42	—	22	14	7·15	22·87	28·60	·20	51·67	—
1943	Wilfred V. Doughty	Brodsworth Flossy . . .	Mar. 2, 1919	May 19	48	—	21	12	3·45	21·75	13·80	·80	36·35	—
1944	Wilfred V. Doughty	Choir Mistress	July 29, 1919	May 26	41	—	30	4	4·27	30·25	17·08	·10	47·43	—
1952	J. H. N. Roberts .	Ora's Gem	Feb. 22, 1919	Apr. 24	73	—	25	8	3·95	25·50	15·80	3·30	44·60	—
1958	Sir Charles Walston	Newton Queen	Apr. 10, 1919	Apr. 4	93	—	37	10	3·25	37·62	13·00	5·00	55·62	H.C.
1959	R. Bruce Ward . .	Piquant	Apr. 21, 1919	May 15	52	—	36	12	5·35	36·75	21·40	1·20	59·35	H.C.
Class 220		*Guernseys*												
2064	H.R.H. The Duchess of Albany	Bosistow Victoria . . .	Mar. 20, 1916	May 26	41	—	38	0	4·70	38·00	18·80	·10	56·90	—
2067 .	E. B. Debenham .	Muriel 36th	June 16, 1913	May 9	58	—	27	8	4·85	27·50	19·40	1·80	48·70	—

Table I.—MILK-YIELD CLASSES at CAMBRIDGE, 1922—*continued.*

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Date of last Service	Total milk yield in 24 hours		Fat percentage	Points				Awards and Remarks
							Lb.	oz.		Milk	Fat per-cent. × 4	Lacta-tion	Total	
Class 220		*Guernseys—continued*		1922										
2070	Mrs. Jervoise	Froome's Lady Fascination 3rd	May 10, 1915	Apr. 14	83	—	35	12	4·50	35·75	18·00	4·30	58·05	Second.
2071	Mrs. Jervoise	Herriard Sweet	Nov. 8, 1917	Mar. 14	114	—	34	4	5·17	34·25	20·68	5·00	59·93	First.
2073	Mrs. W. Howard Palmer	Murrell Veno	Sept. 3, 1914	Mar. 1	127	May 3	24	4	4·80	24·25	19·20	8·70	52·15	—
2074	O. Portman Rubeck	Brittleware Bess	Feb. 8, 1917	Apr. 16	81	June 22	38	14	3·32	38·87	13·28	4·10	56·25	—
2079	J. W. Towler	Ranunculus 32nd	Jan. 7, 1917	June 5	31	—	29	8	4·62	29·50	18·48	Nil	47·98	—
2081	E. J. Wythes	Daisy's Buttercup of Mont Plaisant	May 19, 1917	May 17	50	—	36	4	4·82	36·25	19·28	1·00	56·53	—
Class 221		*Kerrys*												
2140	Miss P. de B. F. Bowen-Colthurst	Castlelough Connie	Mar. 19, 1916	Feb. 14	142	—	38	14	3·45	38·87	13·80	10·20	62·87	Second and R.N. for Champion £5.
2145	J. W. Towler	Gort Primrose 8th	Mar. 16, 1912	May 21	46	—	21	4	5·65	21·25	22·60	·60	44·45	—
2146	J. W. Towler	Wadlands Flora	Sept. 22, 1916	May 11	56	—	23	8	3·40	23·50	13·60	1·60	38·70	—
2147	J. W. Towler	Wadlands Irish Lass	July 3, 1917	Apr. 24	73	—	25	8	4·50	25·50	18·00	3·30	46·80	—
2148	Bertram W. A. Watney	Gort Countess 9th	Feb. 21, 1916	May 21	46	—	36	8	3·92	36·50	15·68	·60	52·78	Third.
2149	Capt. Nelson Zambra and C. W. Milne	Castlelough Cowslip 4th	Mar. 3, 1917	June 3	30	—	34	0	3·90	34·00	15·60	Nil	49·60	H.C.
2150	Capt. Nelson Zambra and C. W. Milne	Castlelough Nina	Mar. 3, 1915	May 22	44	—	54	6	3·17	54·37	12·68	·40	67·45	First & Champion Prize, £10.
Class 222		*Dexters*												
2190	Miss P. de B. F. Bowen-Colthurst	Drumgauna Ladybird	1918	June 2	34	—	26	4	3·62	26·25	14·48	Nil	40·73	—
2193	Lady Kathleen Hare	Peach Blossom of Claragh	Feb. 21, 1917	Apr. 19	78	—	21	8	2·10	21·50	8·40	3·80	33·70	Fat below Standard.
2198	Alfred C. King	La Mancha Madeline	Mar., 1913	May 16	51	—	39	0	3·82	39·00	15·28	1·10	55·38	First.
2199	G. L. M. Lutwyche	Grinstead Folly	Nov. 26, 1918	June 15	21	—	31	2	3·67	31·12	14·68	Nil	45·80	Second.
2201	Mrs. Nutt	Fillongley Farola	Oct. 23, 1917	May 13	54	—	18	4	3·72	18·25	14·88	1·40	34·53	—
2202	Mrs. Nutt	Fillongley Favourite	1914	Apr. 16	81	—	21	4	4·00	21·25	16·00	4·10	41·35	—

TABLE II.—*Average Results of the Cattle in the Milk Yield Classes.*

No. of Cows Competing.	Breed.	Live Weight.	Days in Milk.	Milk.		Fat per cent.	Points
		Lb.		Lb.	oz.		
13	Dairy Shorthorns . .	1411	46	44	11 9/13	3·97	61·18
3	Non - Pedigree Dairy Shorthorns	1414	47	59	5 1/3	3·88	75·56
7	Lincoln Red Shorthorns	1478	38	46	6 2/7	3·52	63·50
4	Devons	1393	60	46	7	3·89	64·99
3	South Devons . . .	1558	56	39	6 2/3	4·94	60·81
1	Longhorn	1540	62	40	12	4·05	59·15
5	Red Polls	1338	76	43	10 2/5	3·38	60·82
12	Ayrshires	1018	47	45	15 8/12	3·61	61·22
9	British Friesian . . .	1377	67	55	7 1/9	3·38	71·66
31	Jerseys	850	93	34	3 27/31	4·45	57·34
8	Guernseys	1023	91	33	0 3/4	4·35	55·54
7	Kerrys	859	62	33	6 6/7	4·00	51·62
6	Dexters	721	53	26	3 2/3	3·49	41·48

BUTTER TESTS (CLASSES 223A & B).

Out of an entry of 123, 83 competed in the Butter Test Classes, which constitutes a record.

The cattle were weighed on Tuesday evening, July 4, and divided into the two classes (A and B), while all the animals in this and the milk yield section were milked on Wednesday at 5 p.m.

The prizes were awarded on the same scale of points as at Derby.

The full particulars of the trials are given in Table III, and the average of the breeds in Table IV.

TABLE III.—RESULTS OF BUTTER TESTS AT CAMBRIDGE, 1922.

CLASS 223A.—COWS EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Date of last service	Milk yield in 24 hours	Butter yield	Butter ratio*	No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	CHURNING TABLE					
																Time			Temperature, °F.		
																Began	Finished	Duration (minutes)	Dairy	Cream and churn	Buttermilk
				Lb.		1922		1922	Lb. oz.	Lb. oz.											
1028	Sir Wm. Hicking, Bt.	Watercrook Cress	Shorthorn	1498	June 3, '14	April 29	68	—	24 4	0 9½	40·84	9·50	2·80	12·30	—	9 45	10 2	17	57	54	56
1030	J. Pierpont Morgan	Cockerham Barrington 2nd	Shorthorn	1589	June 30, '14	May 13	54	—	33 8	1 6¾	23·56	22·75	1·40	24·15	—	9 58	10 7	9	57	54	56
1032	J. M. Strickland .	Keyingham Dairymaid 5th	Shorthorn	1316	Jan. 2, '13	May 27	40		72 8	2 6½	30·12	38·50	Nil	38·50 †	—	9 48	10 12	24	57	54	55
1046	Sir Wm. Hicking, Bt.	Ruby Rosette .	Shorthorn	1346	Jan. 27, '17	May 27	40	—	40 0	0 8¾	73·14	8·75	Nil	8·75	—	9 52	10 2	10	57	54	57
1053	Alfred Palmer .	Wakefield Cowslip 3rd	Shorthorn	1488	Oct. 23, '17	April 2	95	—	46 8	1 11¼	27·05	27·50	5·50	33·00	H.C.	10 0	10 16	16	57	54	57
1058	The Duke of Westminster	Katie	Shorthorn	1456	May 3, '17	June 9	27		51 4	1 14½	26·88	30·50	Nil	30·50	—	10 15	10 30	15	58	54	55
1060	Capt. Arnold S. Wills	Thornby Foggathorpe 7th	Shorthorn	1386	June 3, '17	June 1	35	—	34 12	2 0½	17·10	32·50	Nil	32·50	H.C.	10 20	10 32	12	58	54	55
1075	J. Pierpont Morgan	Newlands Dainty 6th	Shorthorn	1141	April 26, '18	May 30	37	—	31 8	1 10½	19·01	26·50	Nil	26·50	—	10 4	10 25	21	57	54	56
1112	J. Pierpont Morgan	Rickerscote Rosannah	Shorthorn	1337	Jan. 25, '18	June 3	33		27 8	1 6¾	19·34	22·75	Nil	22·75	—	10 25	10 40	15	58	54	54
1129	C. J. Beechener .	Faldo Queen . .	Non-pedigree Shorthorn	1456	Aug. 29, '17	June 18	18	—	51 0	2 1	24·72	33·00	Nil	33·00	H.C.	10 45	10 59	14	58	54	54
1169	Stanley Blundell	Bendish Ada 2nd	L'nc'n Red Shorthorn	1444	Nov. 18, '14	May 23	44	—	68 0	2 0¾	33·22	32·75	·40	33·15 †	—	10 49	11 15	26	58	54	54
1173	John Evens & Son	Burton Diligent .	L'nc'n Red Shorthorn	1498	Oct. '17	May 28	39	—	35 12	1 11½	20·80	27·50	Nil	27·50	—	10 51	11 2	11	58	54	54
1179	Charles E. Scorer	Bracebridge No. 61	L'nc'n Red Shorthorn	1575	Dec. 6, '16	May 25	42	—	51 4	1 9½	32·15	25·50	·20	25·70	—	10 55	11 22	27	58	54	56
1180	Charles E. Scorer	Sudbrook No. 125C	L'nc'n Red Shorthorn	1596	May 9, '14	May 29	38	—	48 0	1 11¾	27·67	27·75	Nil	27·75	—	11 5	11 19	14	58	54	55
1181	Lt.-Col. Sir A. G. Weigall, K.C.M.G.	Petwood Ella . .	L'nc'n Red Shorthorn	1274	April 13, '17	June	19		31 4	1 11¼	18·34	27·25	Nil	27·25	—	11 9	11 25	14	58	54	55
1182	Lt.-Col. Sir A. G. Weigall, K.C.M.G.	Ranty Lucy 2nd .	L'nc'n Red Shorthorn	1491	Unknown	May 11	56	—	52 8	1 12¼	29·93	28·25	1·60	29·85	—	11 15	11 45	30	59	54	55
1328	W. G. Busk . .	Suffragette 1st .	Devon .	1316	Feb. 1, '13	May 8	39	—	50 4	1 12½	28·21	28·50	Nil	28·50	—	9 55	10 18	23	57	54	55
1330	W. G. Busk . .	Wraxall Bluebell	Devon .	1372	1915	April 13	84	June 29	52 4	1 13½	28·33	29·50	4·40	33·90	H.C.	9 51	10 5	14	57	54	55
1332	John H. Chick .	Wynford Broad .	Devon .	1428	Mar. 15, '18	May 3	64	—	32 0	1 9¼	20·27	25·25	2·40	27·65	—	10 0	10 19	19	57	54	55
1333	John H. Chick .	Wynford Pill . .	Devon .	1456	July 23, '13	May 14	53	—	51 4	2 4¼	22·62	36·25	1·30	37 55	H.C.	9 58	10 9	11	57	54	54
1366	Walter Hunt . .	Cherry. . . .	Devon .	1764	Mar. 4, '13	June 6	30	—	46 12	1 15	24·12	31·00	Nil	31·00	—	10 3	10 22	19	57	54	54
1373	George Wills . .	Charm 3rd . .	S'th Devon	1400	April 12, '15	May 1	66	June 19	39 12	2 0	19·87	32·00	2·60	34·60	H.C.	10 2	10 22	20	57	54	55
1374	George Wills . .	Dainty . . .	S'th Devon	1512	Aug. 6, '15	April 25	72	June 5	31 12	2 5	13·72	37·00	3·20	40·20	H.C.	10 18	10 32	14	57	54	54
1526	Viscount Folkestone	Longford Ruby .	Red Poll	1246	Aug. 19, '15	May 28	39	—	47 8	1 6¼	33·77	22·50	Nil	22·50	—	10 26	10 46	20	58	54	55
1531	Major J. A. Morrison, D.S.O.	Brightwell Clinker	Red Poll	1232	Jan. 1, '13	April 3	94	June 14	32 4	1 5¼	24·28	21·25	5.40	26·65	—	10 36	10 55	19	58	54	53

* The "Butter ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

† No award; ratio over 30·00.

TABLE III.—RESULTS OF BUTTER TESTS AT CAMBRIDGE, 1922—*continued.*

CLASS 223A.—COWS EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Date of last service	Milk yield in 24 hours	Butter yield	Butter ratio*	No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	CHURNING TABLE					
																Time			Temperature, °F.		
																Began	Finished	Duration (minutes)	Dairy	Cream and churn	Buttermilk
				Lb.		1922		1922	Lb. oz.	Lb. oz											
1532	Major J. A. Morrison, D.S.O.	Kettleburgh Rosie 2nd C	Red Poll.	1201	Jan. 17, '12	June 4	32	—	41 4	0 7¼	91·03	7·25	Nil	7·25	—	0 55	11 5	10	58	54	54
1666	Thomas Barr	Hobsland Ella 3rd	Ayrshire	1064	Jan. 19, '15	June 10	26	—	46 4	1 13¾	24·87	29·75	Nil	29·75	—	0 43	11 59	16	58	54	54
1673	William Gibson	Moorside Amelia	Ayrshire	994	May 18, '17	April 30	67	—	45 4	1 12	25·85	28·00	2·70	30·70	—	11 9	11 34	25	59	54	54
1675	William Howie	Meikle Kilmory Marguerite	Ayrshire	924	July 15, '14	June 7	29	—	41 12	1 12¼	23·64	28·25	Nil	28·25	—	11 20	11 44	24	55	54	54
1676	William Howie	Moss Rose 2nd	Ayrshire	1085	April 17, '15	June 12	24	—	45 12	2 0¼	22·69	32·25	Nil	32·25	—	11 22	11 35	13	59	54	53
1682	Jacob S. Murray	Carston Cinderella 2nd	Ayrshire	1330	June, 1912	June 4	32	—	64 4	2 9¾	24·62	41·75	Nil	41·75	H.C.	11 47	12 10	23	60	54	55
1686	Sir Hugh Shaw Stewart, Bt.	Ardgowan Girl Queen	Ayrshire	952	July 11, '15	May 10	57	—	42 0	1 7¾	28·29	23·75	1·70	25 45	—	11 28	11 45	17	59	54	54
1760	A. & J. Brown	Hedges Gracious Dutch	British Friesian	1176	June 3, '16	June 8	28	—	58 12	2 4¼	25·93	36·25	Nil	36·25	H.C.	12 4	12 18	14	61	54	54
1761	William H. Case	Elmham Hetty 2nd	British Friesian	1393	Oct. 11, '15	June 9	27	—	64 4	1 14½	33·70	30·50	Nil	30·50	—	12 5	12 20	15	61	54	54
1764	Ethelbert Furness	Hedges Familiar 2nd	British Friesian	1400	Feb. 16, '18	April 6	91	—	60 8	2 2¾	27 85	34·75	5·10	39·85	H.C.	12 7	12 33	26	61	54	54
1781	James Russel	Zuider Lilian	British Friesian	1330	July 1, '15	April 27	70	—	47 4	2 6	19 89	38·00	3·00	41·00	H.C.	12 9	12 21	12	61	54	54
1782	W. & R. Wallace.	Beaden Gillian	British Friesian	1316	Jan. 29, '16	May 1	66	—	44 0	1 6¼	31 64	22·25	2·60	24·85	—	2 15	12 34	19	61	54	54
1783	W. & R. Wallace.	Knebworth Empress 2nd	British Friesian	1554	Dec. 14, '14	May 14	53	—	34 4	1 2	30·44	18·00	1·30	19·30	—	12 21	12 43	22	61	54	54
1784	W. & R. Wallace.	Inwood Garnet	British Friesian	1386	June 27, '17	April 19	78	May 24	69 8	2 6¼	29 07	38·25	3·80	42·05	3rd Prize	12 30	1 3	33	62	54	56
1898	S. G. Asher	Dainty	Jersey	980	Jan. 14, '14	Jan. 20	167	April 6	38 2	2 13¼	13·48	45·25	12·00	57·25	1st Prize and E.J.C.S. Gold Medal	9 50	10 20	30	57	54	54
1899	S. G. Asher	Petunes Princess	Jersey	952	Jan. 6, '17	Mar. 23	105	June 13	38 14	1 14½	20·39	30·50	6·50	37·00	Cert. of Merit	9 52	10 15	23	57	54	58
1904	A. E. Bond	Frontieres Maid	Jersey	924	Feb. 7, '17	May 2	65	June 26	31 8	1 4	25·20	20·00	2·50	22·50	—	10 32	11 12	40	58	54	60
1910	Mrs. Evelyn	Fairlawne Hussy	Jersey	1050	Aug. 8, '16	Feb. 6	150	April 5	45 8	2 3½	20·50	35·50	11·00	46·50	2nd Prize	11 4	11 36	32	59	54	55
1927	Mrs. Rudd	Fire King's Tidy	Jersey	924	May 2, '18	Feb. 1	155	April 13	45 10	1 12¾	25·39	28·75	11·50	40·25	Cert. of Merit	12 10	12 37	27	61	54	59
1930	The Hon. Mrs. Tennant	Ambrosiel	Jersey	1036	June 12, '14	Dec. 19, 1921	199	Mar. 7	30 8	1 2¾	26·02	18·75	12·00	30·75	—	2 0	2 12	12	61	54	56
1933	R. Bruce Ward	Evergreen.	Jersey	924	Sept. 4, '16	May 8	59	—	42 2	1 12¼	24·07	28 25	1·90	30·15	—	2 5	2 29	24	61	54	57
1934	R. Bruce Ward	Ida.	Jersey	1057	Mar. 15, '14	Mar. 29	99	June 12	29 4	1 4¼	23·11	20·25	5·90	26·15	—	2 4	2 12	8	61	54	54
2070	Mrs. Jervoise	Froome's Lady Fascination 3rd	Guernsey.	1106	May 10, '15	April 14	83	—	35 12	1 9¾	22·21	25·75	4·30	30·05	—	2 2	2 14	12	61	54 54	56
2071	Mrs. Jervoise	Herriard Sweet	Guernsey.	931	Nov. 8, 17	Mar. 14	114	—	34 4	2 0¾	16·73	32·75	5·00	37·75	H.C.	2 0	2 18	18	61	54	57
2074	O. Portman Rubeck	Brittleware Bess	Guernsey.	1176	Feb. 8, '17	April 16	81	June 22	38 14	1 4¼	30·71	20·25	4·10	24·35	—	12 16	12 40	24	61	54	57
2150	Capt. Nelson Zambra and C. W. Milne	Castlelough Nina	Kerry	1099	Mar. 3, '15	May 23	44	—	54 6	1 5¼	40·94	21·25	·40	21·65	—	11 35	12 0	25	59	54	56

* The "Butter ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

TABLE III.—RESULTS OF BUTTER TESTS AT CAMBRIDGE, 1922—*continued.*

CLASS 223B.—COWS NOT EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Date of last service	Milk yield in 24 hours	Butter yield.	Butter ratio*	No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	CHURNING TABLE					
																Time			Temperature, °F		
																Began	Finished	Duration (minutes)	Dairy	Cream and Churn	Buttermilk
				Lb.		1922		1922	Lb. oz.	Lb. oz.											
1667	Thomas Barr	Westburn Miss Gray	Ayrshire	868	April, '16	April 9	88	June 7	46 8	1 11¼	27·05	27·50	4·80	32·30	H.C.	11 4	11 36	32	59	54	54
1674	William Gibson	Moorside Arietta.	Ayrshire	868	Jan. 2, '18	June 18	18	—	41 0	1 6	29·81	22·00	Nil	22.00	—	11 26	11 47	21	59	54	55
1900	Mrs. G. J. Austen	Era	Jersey	812	Feb. 3, '17	Mar. 12	116	June 28	30 10	1 2	27·22	18 00	7·60	25·60	—	9 54	10 30	36	57	54	58
1901	Mrs. G. J. Austen	Jersey Beauty 2nd	Jersey	868	Feb. 2, '17	Feb. 28	128	June 12	33 0	1 14¼	17·45	30·25	8·00	38·25	Cert. of Merit	10 2	10 35	33	57	54	58
1902	Grosvenor Berry.	Nimrod's Dinah 4th	Jersey	847	Sept. 11, '15	May 7	60	July 2	52 10	2 5¾	22·30	37·75	2·00	39·75	Cert. of Merit	9 59	10 25	26	57	54	58
1903	Grosvenor Berry	Postage 2nd	Jersey	798	April 18,' 18	Jan. 23	164	April 13	42 0	2 5½	17·92	37·50	12·00	49·50	1st Prize and E.J.C.S. Silver Medal	10 1	10 40	39	57	54	58
1905	R. W. Carson.	Ledas Chablis.	Jersey	840	July 20, '16	April 1	96	June 22	36 0	1 9½	22·58	25·50	5·60	31·10	—	10 43	11 26	43	58	54	56
1907	R. W. Carson.	Lynn's Fern Lady 2nd	Jersey	805	April 30, '17	May 28	39	—	29 0	1 8¼	18·93	24·50	Nil	24·50	—	10 51	11 44	53	58	54	57
1908	R. W. Carson.	Noble Origa's Queen	Jersey	770	Oct. 26, '12	May 9	58	—	35 12	1 7	24·84	23·00	1·80	24·80	—	10 55	11 14	19	58	54	58
1911	Mrs. Evelyn	Wotton Pink May	Jersey	896	July 25, '16	April 15	82,	June 25	43 8	1 14	23·20	30·00	4·20	34·20	—	11 7	11 39	32	59	54	56
1912	Col. L. G. Gisborne, C.M.G.	Distressed Lady	Jersey	756	April 26, '15	April 4	93	June 29	37 12	1 10½	23·00	26·25	5·30	31·55	—	11 17	11 45	28	59	54	57
1913	Col. L. G. Gisborne, C.M.G.	Sweet Bread 46th	Jersey	749	Nov. 3, '17	June 18	18	—	34 8	1 13¾	18·55	29·75	Nil	29·75	—	11 32	11 55	23	59	54	58
1920	Major the Hon. Harold Pearson	Amira's Pride's Miss	Jersey	798	July 7, '16	May 20	47	—	36 0	1 10¾	21·53	26·75	·70	27·45	—	11 40	12 17	37	60	54	56
1924	Lord Roundway	Chatillon	Jersey	784	April 18, '15	May 26	41	—	38 0	1 7½	25·87	23·50	·10	23·60	—	11 48	12 20	32	60	54	60
1925	Lord Roundway	Mill Maid 5th.	Jersey	868	May 4, '12	Feb. 26	130	April 29	28 8	1 7¼	19·40	23·50	9·00	32·50	—	12 1	12 27	26	61	54	60
1926	Mrs. Rudd	Cygnus 3rd	Jersey	882	Sept. 21, '16	Jan. 25	162	April 23	39 0	2 2¼	18·08	34·50	12·00	46·50	2nd Prize and E.J.C.S. Bronze Medal	12 9	12 24	15	61	54	60
1928	The Hon. Mrs. Murray Smith	Vixen	Jersey	896	Dec. 20, '18	Mar. 23	105	June 7	24 14	1 4¾	19·18	20·75	6 50	27·25		12 15	12 34	19	61	54	60
1931	Laurence E. Tubbs	Stapleton Mollie	Jersey	672	Oct. 2 '17	May 4	63	—	18 0	1 1¼	16·45	17·50	2·30	19·80	—	2 2	2 11	9	61	54	56
1932	R. Bruce Ward	Elfrida.	Jersey	868	June 26, '17	April 18	79	—	38 0	1 11	22·51	27·00	3·90	30·90	—	2 1	2 12	11	61	54	55
1935	Sir G. Stanley White, Bt.	Freesia of Hollywood	Jersey	868	May 22, '17	Jan. 16	171	April 14	26 8	1 3¾	21·46	19·75	12·00	31·75	—	2 7	2 23	16	61	54	55
1939	Grosvenor Berry	Taranto	Jersey	742	Mar. 6, '19	April 17	80	June 20	38 10	0 14¾	41·89	14·75	4·00	18·75	—	2 12	2 37	25	61	54	58
1940	A. E. Bond	Marston Lucinda.	Jersey	812	June 13, '19	May 25	42	—	22 14	1 14½	12·51	30·25	·20	30·45	Cert. of Merit	2 15	2 36	21	61	54	58
1952	J. H. N. Roberts.	Ora's Gem	Jersey	728	Feb. 22, '19	April 24	73	—	25 8	1 3	21·47	19·00	3·30	22·30	—	2 9	2 23	14	61	54	54
1957	Laurence E. Tubbs	Oxlip	Jersey	770	July 23, '19	Jan. 4	183	April 16	33 12	1 9¾	20·97	25·75	8·00	33·75	Cert. of Merit	2 15	2 45	30	61	54	57
1958	Sir Charles Walston	Newton Queen	Jersey	700	April 14, '19	April 4	93	—	37 10	2 6½	15·63	38·50	5·00	43·50	Cert. of Merit	2 18	2 37	19	61	54	58
1959	R. Bruce Ward	Piquant	Jersey	868	April 21, '19	May 15	52	—	36 12	2 10¾	13·75	42·75	1·20	43·95	3rd Prize	2 14	2 47	33	61	54	60
2079	J. W. Towler	Ranunculus 32nd	Guernsey	875	Jan. 7, '17	June 5	31	—	29 8	1 7¾	19·87	28·75	Nil	28·75	—	12 25	12 35	10	61	54	55
2145	J. W. Towler	Gort Primrose 6th	Kerry	784	Mar. 16, '12	May 21	46	-	21 4	1 5	16·19	21·00	·60	21·60	—	12 4	12 14	10	61	54	55
2146	J. W. Towler	Wadlands Flora	Kerry	840	Sept. 22, '16	May 11	56	—	23 8	0 14	26·85	14·00	1·60	15·60	—	12 12	12 34	22	61	54	56
2147	J. W. Towler	Wadlands Irish Lass	Kerry	672	July 3, '17	April 24	73	—	25 8	1 4½	19·66	20·75	3·30	24·05	—	11 42	12 12	30	60	54	55
2148	Bertram W. A. Watney	Gort Countess 9th	Kerry	812	Feb. 21, '16	May 21	46	—	36 8	1 11½	21·23	27·50	·60	28·10	—	11 40	11 55	15	60	54	55
2149	Capt. Nelson Zambra and C. W. Milne	Castlelough Cowslip 4th	Kerry	868	Mar. 3, '17	June 6	30	—	34 0	1 3¾	27·54	19·75	Nil	19·75	—	11 34	11 54	20	59	54	55

* The "Butter ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

TABLE IV.—*Average Results of the Cattle in the Butter Test Classes.*

CLASS 215A.—EXCEEDING 900 lb. LIVE WEIGHT.

No. of cows competing.	Breed.	Live weight.	Days in milk.	Milk.		Butter.		Ratio.	Points.
		Lb.		Lb.	oz.	Lb.	oz.	Lb.	
10	Dairy Shorthorns . .	1401	45	41	$4\frac{2}{5}$	1	$9\frac{9}{40}$	26·18	25·72
6	Lincoln Red Shorthorns	1479	40	47	$12\frac{2}{3}$	1	$12\frac{1}{6}$	28·14	28·16
4	Devons	1393	60	46	7	1	$13\frac{7}{8}$	24·87	31·87
3	South Devons . . .	1558	56	39	$6\frac{2}{3}$	2	$1\frac{1}{3}$	18·92	34·93
3	Red Polls	1226	55	40	$5\frac{1}{3}$	1	1	37·96	18·60
6	Ayrshires	1054	39	47	$8\frac{2}{3}$	1	$14\frac{3}{8}$	24·97	30·62
7	British Friesians . .	1365	59	54	$1\frac{1}{7}$	1	$15\frac{1}{7}$	27·77	33·04
8	Jerseys	981	124	37	11	1	$12\frac{13}{32}$	21·22	36·80
3	Guernseys	1071	92	36	$4\frac{2}{3}$	1	$10\frac{1}{4}$	22·12	31·45
1	Kerry	1099	44	54	6	1	$5\frac{1}{4}$	40·94	21·65

CLASS 215B.—NOT EXCEEDING 900 lb. LIVE WEIGHT.

2	Ayrshires	868	53	43	12	1	$8\frac{3}{4}$	28·28	26·05
24	Jerseys	811	90	34	$1\frac{5}{6}$	1	$10\frac{91}{96}$	20·27	31·92
1	Guernsey	875	31	29	8	1	$7\frac{3}{4}$	19·87	23·75
5	Kerrys	795	50	28	$2\frac{2}{5}$	1	$4\frac{3}{5}$	21·86	21·60

TABLE V.—MILK-YIELD CLASSES FOR GOATS AT CAMBRIDGE, 1922.

No. in Catalogue	Exhibitor	Name of goat	Breed	Date of birth	Date of last kid	No. of days in milk	Milk yield			Percentage of Fat		Percentage of Solids not Fat		Points					Awards and Remarks
							Morn.	Even.	Total	Morn.	Even.	Morn.	Even.	Milk	Fat lb. × 20	Solids not Fat × 4	Lactation	Total	
							Lb. oz.	Lb. oz.	Lb. oz										
2273	Mrs. Grace	Brentmoor Bunty	Anglo-Nubian	Mar. 27, 1917	May 13, 1922	48	3 13	3 4	7 1	5·0	4·7	9·24	9·23	7·06	6·87	2·61	·1	16·64	3rd Prize
2274	Mrs. Grace	Herne Bay Honey Suckle	Anglo-Nubian	Feb. 25, 1919	May 24, 1922	56	4 15	4 10	9 9	4·6	4·9	9·44	9·44	9·56	9·07	3·60	·2	22·43	H.C. & Pomeroy Cup & £1 1s. Special
2275	Miss Pelly	Nash Baroness	Anglo-Nubian	Apr. 7, 1919	Jan. 2, 1922	85	1 8	1 12	3 4	5·6	5·55	9·81	9·88	3·25	3·62	1·28	2·4	10·55	—
2280	Miss Pelly	Theydon Tilda	Anglo-Nubian	Mar. 22, 1919	May 5, 1922	58	3 11	3 12	7 7	4·4	4·3	9·23	9·31	7·43	6·47	2·76	·3	16·96	Reserve Pomeroy Cup
2281	Mrs. Abbey	Tremedda Lidia	Toggenburg	Mar. 15, 1919	Mar. 19, 1922	109	8 5	8 12	17 1	4·5	5·7	9·03	8·85	17·06	17·46	6·10	1·1	41·72	1st Prize, Dewar Cup and B.G.S. Challenge Certificate for best dual purpose
2282	Baroness Burton	Leazes Pearl	British Saanen	May 1, 1915	Mar. 26, 1922	102	4 7	4 5	8 12	5·1	4·6	9·64	9·59	8·75	8·49	3·76	1·0	22·00	1st Prize
2283	Miss Chamberlain	Welcome of Westons	British Saanen	Jan. 10, 1920	Mar. 6, 1922	123	4 11	4 11	9 6	3·3	3·45	8·73	8·51	9·37	6·32	3·22	1·3	20.21	H.C.
2284	Mrs. Hope Maurice	Ridgeway Rosealba	British Saanen	Mar. 29, 1919	Apr. 10, 1922	87	6 14	6 10	13 8	6·1	5·3	9·32	9·48	13·50	15·40	5·07	·7	34·67	3rd Prize
2285	Mrs. Rutter	Bayden Lotus	Anglo-Toggenburg	Mar. 24, 1919	Mar. 14, 1922	114	2 11	2 9	5 4	3·5	3·35	8·64	9·17	5·25	3·60	1·87	1·2	11·92	—
2286	Mrs. Abbey	Didgemere Dulcie	British Alpine	Mar. 9, 1920	Apr. 13, 1922	84	8 13	8 6	17 3	3·6	3·5	7·99	7·85	17·18	12·20	5·45	·7	35·53	2nd Prize, R. for Dewar Cup and R. for B.G.S. dual purpose
2287	Mrs. Abbey	Preference	British Alpine	Mar. 28, 1917	Mar. 27, 1922	101	4 12	3 10	8 6	3·7	3·8	8·72	8·99	8·37	6·27	2·96	1·0	18·60	2nd Prize
2288	Mrs. Abbey	Tremedda Lalage 2nd	British Alpine	Feb. 27. 1920	Apr. 1 1922	96	5 3	5 7	10 10	3·7	3·6	9·03	8·83	10·62	7·74	3·79	·9	23·05	H.C.
2289	Mrs. Soames	Pytchley Clara	British Alpine	Feb. 19, 1919	Apr. 14, 1922	83	4 2	4 4	8 6	3·1	3·1	8·82	9·01	8·37	5·19	2·98	·7	17·24	—
2291	Mrs. Hines	Beechmead Alice	Anglo-Nubian Swiss	Mar. 6, 1919	Mar. 6, 1922	122	4 11	4 9	9 4	4·6	4·6	8·88	8·96	9·25	8·51	3·29	1·3	22·35	H.C.
2292	Mrs. Hines	Beechmead Edith	Anglo-Nubian Swiss	Feb. 17, 1920	May 7, 1922	59	5 8	5 1	10 9	4·5	4·7	9·18	8·6[illegible]	10·56	9·71	3·77	·3	24·34	Reserve
2293	H. E. Jeffery	Ariette	Anglo-Nubian Swiss	Feb. 17, 1920	Mar. 23, 1922	105	3 12	3 7	7 3	4·7	4·9	8·99	9·16	7·18	6·89	2·61	1·0	17·68	—
2294	Mrs. Hope Maurice	Spring Flower	Toggenburg	May 16, 1920	May 21, 1922	45	5 2	5 1	10 3	4·8	4·5	9·42	9·43	10·18	9·47	3·84	nil.	23·49	H.C.
2297	Mrs. Soames	Pytchley Snowflake	Anglo-Nubian Swiss	Jan. 19, 1920	Apr. 18, 1922	79	3 1	2 13	5 14	5·0	4·1	8·62	8·78	5·87	5·36	2·05	·6	13·88	—

EXPERIMENTS IN THE DAIRY.

At the Show at Derby in 1921 an experiment in making cheese from Shorthorn and British Friesian milk was undertaken with a view to throwing some light upon the comparative values of those milks for cheese-making.

This year at Cambridge the experiment was extended, the milks used being from the following breeds of cattle : Shorthorn, British Friesian, Red Poll, Ayrshire, Jersey and Guernsey.

The milks and cheeses were treated in exactly the same way as at Derby, consequently all the details and information required are contained in Tables VI and VII on pp. 184 and 185.

From the Showyard the cheeses were sent to the Staffordshire County Council Farm Institute at Penkridge, where they were looked after by Miss E. Noble, the Dairy Instructress. Mr. J. C. Rushton, the Principal of the Institute, subsequently judged and reported on them as follows :—

" The cheeses have all turned out very well this year, especially those made from the Guernsey and Jersey milks. We consider the Guernsey to be the best, followed by the Jersey and the larger Ayrshire cheese. The Shorthorns would have yielded more had the milk been not quite so acid. It is interesting to note that the cheeses made from the milks showing a low percentage of fat ripened sooner than those made from the richer milks.

" A repeat Ayrshire cheese from 15 gallons of milk was made because one lot of milk was very acid."

DIFFERENT METHODS OF CHURNING.

In the report of the Steward of Dairying on the work done in the Dairy at Derby, the new method of churning, as described in the revised Simple Rules for Butter Making, was mentioned and it was suggested that more exhaustive trials might be undertaken at Cambridge, which suggestion was approved by the Council of the Society.

The new method consists in putting water at a temperature of from 75° to 80° Fahr. (dependent on the air temperature) into the churn just before the butter breaks, the effect of which is to separate the curd, or caseous matter, from the grains of butter more effectually than when cold water is used.

It is claimed that butter so treated is of better quality and keeps longer than that made in the ordinary way, and, further, that there is less butter lost in the buttermilk since the warm water separates all the butter grains from the curd.

TABLE VI.

Breed	Date	Milk	Fat %		Temperature		Time			Acidity			Nature of Coagulation	'marks
			Milk	Whey	Fahr.	Fahr.	Renneting	Coagulation commencing	Difference	Milk	When drawing Whey	Grinding		
Shorthorn .	July 3	Gall. 20	3·8	·15	58°	85°	a.m. 11.0	a.m. 11.8	minutes 8	·24	·22	·75	Firm	Good, curd, milk rather acid
British Friesian	July 3	20	3·75	·1	58°	85°	11.5	11.11	11	·2	·17	·7	Normal	Fair curd
Ayrshire . .	July 3	20	3·9	·2	58°	85°	11.2	11.12	10	·2	·2	·7	Tender	Normal curd
Red Poll . .	July 5	20	5·8	·25	58°	86°	11.4	11.17	13	·21	·18	·89	Soft	Wet inferior curd
Jersey . . .	July 5	20	4·7	·2	58°	88°	10.55	11.1	6	·2	·17	·6	Soft	Very nice curd
Guernsey . .	July 5	20	5·25	·2	58°	88°	10·57	11·4	7	·21	·19	·69	Normal	Rich curd, high colour. Firm
British Friesian	July 4	15	3·2	·2	59°	86°	11.45	11.54	9	·2	·17	·64	Soft	Inclined to be slimy and wet
Ayrshire . .	July 4	15	3·6	·2	59°	86°	11.38	11.47	9	·21	·17	·67	Slimy	Inclined to be slimy and wet. Tainted
Shorthorn .	July 4	15	3·5	·2	59°	86°	11.49	11.57	8	·21	·18	·65	Good	Nice curd
Red Poll . .	July 6	15	3·3	None	61°	86°	10.34	10.42	8	·23	·16	·6	Soft	Slow
Ayrshire (No. 2)	July 6	15	Sour	·25	61°	86°	10.5	10.9	4	·28	·2	·6	(Tainted) Acid	Acid milk, but improved and dried off well

TABLE VII

Breed	Date	Milk in Gallons			Fat Percentage		Weight				Loss in Weight	Remarks
		Morn.	Even.	Total	Milk	Whey	Salt	Curd at Grinding	Cheese from Press	Cheese when Ripe		
							Oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	
Shorthorn . .	July 3	10	10	20	3·8	·15	8¾	25 12	23 4	20 0	3 4	Quality and Flavour very good. Texture firm
British Friesian.	July 3	10	10	20	3·75	·1	8½	25 4	23 0	20 10	2 6	Quality and Flavour very good. Texture good
Ayrshire . . .	July 3	10	10	20	3·9	·2	9	28 12	26 8	23 6	3 2	Quality very good. Flavour slightly bitter. Texture good
Red Poll . .	July 5	7	13	20	5·8	·25	10	30 0	26 12	23 8	3 4	Quality fair. Flavour poor. Texture rough
Jersey . . .	July 5	10	10	20	4·7	·2	10½	31 0	26 0	24 8	1 8	Quality and Flavour very good. Texture slightly firm
Guernsey. . .	July 5	10	10	20	5·25	·2	10½	31 0	29 0	25 10	3 6	Quality and Flavour very good. Silky texture
British Friesian.	July 4	—	15	15	3·2	·2	6	18 0	16 0	13 14	2 6	Quality fair. Flavour good. Texture soft
Ayrshire . . .	July 4	—	15	15	3·6	·2	7	21 0	19 0	16 8	2 8	Quality good. Flavour bitter. Texture rough
Shorthorn . .	July 4	—	15	15	3·5	·2	7	19 8	16 12	14 14	1 14	Quality good. Flavour slightly bitter. Texture good
Red Poll . .	July 6	—	15	15	3·3	None	7	19 0	17 8	15 14	1 10	Quality poor. Flavour tainted. Texture soft and soapy
Ayrshire (No. 2).	July 6	5	10	15	Sour	·25	5½	17 4	16 8	14 11	1 13	Quality good. Flavour bitter. Texture good

It is impossible to store the butters made at the Show long enough to test their keeping qualities, nor would such a test be reliable, as milk from the cows in the yard is not normal, the animals being fed with a view to winning prizes in the Milk Yield and Butter Test Classes.

TABLE VIII.—DIFFERENT METHODS OF CHURNING.

Breed	Cream	Condition of Cream	Old Method Temperature		Butter	New Method Temperature		Butter	Difference of Weight in Butter in favour of	
			Cream in Churn	Added Water		Cream in Churn	Added Water		Old Method	New Method
	Lb. oz.		Fahr.	Fahr.	Lb. oz.	Fahr.	Fahr.	Lb. oz.	Lb. oz.	Lb. oz.
Shorthorn .	10 4	Sweet	55°	52°	6 8½	56°	75°	6 8	0 ½	—
Jersey . . .	13 0	Sweet	54°	52°	8 3	54°	75°	8 8	—	0 5
Ayrshire . .	5 0	Sweet	54°	52°	2 15½	54°	75°	2 15¾	—	0 ¼
British Friesian	5 0	Sweet	54°	54°	2 15¾	54°	75°	2 14	0 1¾	—
Mixed Milk .	6 0	Sweet	52°	49°	3 11	52°	75°	3 15	—	0 4
Mixed Milk .	7 0	Sweet	55°	52°	4 2¼	56°	75°	4 8¼	—	0 6
Mixed Milk .	7 0	Ripened	56°	56°	4 0	56°	75°	4 4¼	—	0 4¼
Mixed Milk .	6 0	Ripened	52°	50°	3 4¾	52°	75°	3 8½	—	0 3¾
									0 2¼	1 7¼

The table on page 186 gives full details of the experiment, the lots of cream being duplicated and taken from one bulk of cream in every case.

WHEY CONTENTS.

To illustrate the loss of valuable food stuffs which occurs where whey is wasted, a subject to which the Society is giving special attention, an exhibit, lent by the National Institute of Research in Dairying, was placed in the Dairy and attracted considerable attention.

The distribution of the constituents per gallon in making milk into cheese was illustrated by three tiers of bottles containing these constituents.

	Water	Milk Sugar	Casein	Albumin	Fat	Ash
	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.
Top Tier : One gallon of milk, weighing 10 lb. 4½ oz. and containing	9 0	0 7¾	0 5	0 ½	0 6	0 1¼
Second Tier : which yields 1 lb. of cheese containing	0 5½	0 ½	0 4¼	—	0 5½	0 ¼
Third Tier : and 8 lb. 14 oz. whey, containing	8 4	0 7¼	0 ¾	0 ½	0 ½	0 1

The manufacture of various kinds of cream and soft cheeses, cheese mixture, and scalded cream was carried out throughout the week, and this, in addition to the experiments and milk and butter test trials, kept the Assistant and Voluntary Stewards, Dairymaids and staff, busy during the whole week. With such a willing lot of workers, and with the clerical assistance of Messrs. Hasted, Hammond and Craufurd, the work of the Steward of Dairying is rendered comparatively light, and to all I desire to tender my sincere thanks.

ERNEST MATHEWS.

Little Shardeloes,
Amersham, Bucks.

AGRICULTURAL EDUCATION EXHIBIT, CAMBRIDGE, 1922.

THE excellence of the Agricultural Education Exhibit, at Cambridge, and the improvement marked by it over some of those of recent years is the subject of comment by the steward, Mr. W. H. Parker. This might perhaps have been expected, for Cambridge is now an important centre of agricultural research and demonstration. Particularly noteworthy was the difference in demonstration and explanation of the exhibits themselves. The persons in charge had confidence in their exhibits and the faith necessary for expounding them with vigour and courage. Often the vigour and the faith behind it aroused an interest in the demonstrator and eventually in the object of demonstration. Even during the busiest parts of the middle days of the Show an interested visitor could find someone to answer his questions and even to draw his attention to unnoticed objects, and the explanation and demonstration of objects at Cambridge should provide an example for those whose duty it is to give similar service at future shows.

The exhibits themselves, as in previous years, were somewhat too much crowded, and to give them the study they deserved it was necessary to be at the Pavilion during the less busy parts of the day. It is, perhaps, not to be expected, and someone may say not to be desired, that those who are in charge of agricultural research or education should display their wares in the ways in which they would be displayed by commercial firms, but no harm could follow if the persons who are responsible for the setting out of objects in the Agricultural Education Exhibition would study the methods used by private businesses for advertising their goods which are very similar in nature.

In recent years these Reports may appear to have been unduly critical of the general arrangements of the Exhibition and the methods used for the display of objects, but the reason for these criticisms was seen at Cambridge by visits to similar exhibits which were displayed for different purposes. Private firms have, by keen interest and experience, learned how to " put their goods in the shop window," and in the long run agricultural scientists and teachers will learn and practice the same methods. They might begin by moving some of their exhibits into such a position that they can be seen by the passer-by, for it is not every one who likes a narrow door and a confined space, to say nothing of having objects in front, to the right and the left, and sometimes behind, all demanding attention at the same instant.

Of the exhibits themselves much could be written. The Meteorological Office again showed some of its wonderful charts. The best of these ought to be published in a form in which they could be used by agricultural students or teachers, and some others are more suitable for an exhibition intended for meteorologists. Even agricultural colleges have not begun to teach meteorology, or even its simplest principles, and the opinion may be expressed that few agriculturists would understand some of these charts. In fact, one of the first comments heard on entering the Pavilion was that " all this is too high flown for farmers." It would be a pity if the Meteorological Office did not continue to display some of the information it gathers, but it is difficult to see why it should always be given one of the most conspicuous positions in the Education Pavilion. As regards some of the actual exhibits of this office : the question might be asked why it decided to exhibit climagraphs showing conditions suitable for cotton production in an exhibition primarily intended for the benefit of English agricultural education and the English farmer.

The National Institute for Research in Dairying, Reading, was showing various charts relating to milk production and the importance of breeding and selecting animals for this purpose. Amongst these was a chart showing the progeny records of dairy bulls, designed to show the importance of the sire and the desirability of keeping aged bulls of proved merits. The importance of the sire in breeding for milk production is well known to some farmers, but it is not often possible to measure this importance in gallons of milk per year. This chart was on the whole very effective. Other charts were designed to show the yield of milk by cows of different ages. These clearly showed both the difficulty and the necessity of obtaining records for fairly long periods. When the necessity is realised and the difficulty overcome it will be possible to give a clear demonstration of the influence of age on milk yield, but for the present much remains to be done in obtaining and studying records. Another interesting chart showed the cost of milk under average conditions, and two interesting figures from this may be given :—

	Food.	Labour.
Winter . . .	72 per cent.	11·7 per cent.
Summer . . .	53 ,, ,,	14·2 ,, ,,

This did something to indicate the importance of reducing the cost of home-grown foods and consideration of the relative values of purchased foods, and of compounding properly balanced rations. A chart designed to show the effect of milk yield on cost per gallon was a little too simple to be really accurate, but was at least effective. Another interesting chart indicated the yield obtained from cows calving in different months of the year. Besides this series of charts the Institute was also showing a number of miscellaneous exhibits relating to the production of clean milk, and also others showing the importance of vitamines in feeding pigs.

The Plant Breeding Institute, Cambridge, showed some very interesting samples of cereals and grasses. The exhibit of wheats of good milling and baking quality should be of value in the Eastern Counties. This Institute was also showing some very effective exhibits relating to the principles of Mendelian breeding. Many agricultural students would have got more value out of them if they had been better displayed.

Dr. R. N. Salaman, of Royston, also staged exhibits dealing with plant breeding, notably with potatoes. Some of Dr. Salaman's experiments have not been continued sufficiently long to enable him to obtain definite results, but the exhibits at Cambridge were at least interesting and some of the experiments seemed to be quite promising.

Mr. E. S. Beaven, of Warminster, had a large exhibit relating to barleys. The samples of ears of varieties of barley from various parts of the world were interesting, instructive and well displayed. This was also the case with exhibits intended to demonstrate the different characteristics of barley of good and bad malting quality, and of barley grains of different varieties grown under varying conditions. On the whole, Mr. Beaven's exhibit was better staged and better managed than any other in the Pavilion.

The School of Agriculture, Cambridge, had a large number of exhibits relating to problems of breeding, and amongst these the chickens shown to illustrate sex-linked inheritance in poultry were exceedingly interesting and easily understood. Some of its exhibits relating to insect pests were very similar to those which have been seen at other shows. It is rather curious that interest in such exhibits is mainly confined to experts or scientists, but this may be due to the fact that entomologists have not yet been able to offer much-information of practical value to the farmer. Entomologists have gathered a large amount of knowledge, some of which can be demonstrated on cards and in specimen tubes, but little of it leads to any practical methods for dealing with the pests themselves. Perhaps the most interesting and instructive part of the School of Agriculture's exhibits was that relating to the physiology of farm animals. It brought to memory Arthur Young's description of Bakewell's kitchen in the middle of the eighteenth century, where the practical study of physiology of farm animals may be said to have begun in this country. Many of these exhibits were of an extremely practical nature and their characteristics were easily demonstrated. Mr. Hammond, who at certain periods was explaining these exhibits, deserves to be congratulated both on the display and the manner and method of explanation.

Outside the Pavilion, situated at some distance, the Plant Breeding Institute and the School of Agriculture were showing new varieties of cereals planted in plots on the "chequer board" system; also potatoes, and plots showing different mixtures of crops for forage and silage purposes. The illustration of methods of treating experimental plots both of potatoes and of cereals should do something to give farmers confidence in results obtained by the experimental-plot method, but doubtless most farmers will still need to be convinced of the value of experimental results by demonstration on a much larger scale under normal field conditions.

One or two minor exhibits in the Pavilion also drew a fair amount of attention. In particular, the specimens of skin-curing which were on view showed a great improvement on any which were to be seen at previous shows.

Some exhibits which might well have been included in the Agricultural Education Exhibition, if room could have been found for them, were to be seen in the Pavilion of the Ministry of Agriculture. Amongst these the diaphanoscope—the appliance for detecting empty husks in grass seed—seemed to be very attractive.

On the whole, the Agricultural Education Exhibition at Cambridge was a great improvement on that of Derby in the previous year. Again it was not possible to provide the exhibition of work done in village schools in connection with rural science and the art of gardening or various handicrafts. It would be very satisfactory to many if these popular exhibits could again be found in the Royal Show Yard, for there is no doubt that they have a value in creating an interest in nature in the minds of the rising generation of farm labourers.

The School of Agriculture and the National Intitute of Agricultural Botany, with the farms connected with them, were open to visitors during the period of the Show. Many persons visited them and were well satisfied with the arrangements for showing the features of interest. In fact, the special feature of the Agricultural Education Exhibition at Cambridge was the care and trouble taken to cater for the convenience and assistance of all its visitors.

The Exhibit was under the charge of Mr. W. H. Parker, Director of the National Institute of Agricultural Botany, Cambridge, who is to be congratulated upon its success.

THE FORESTRY EXHIBITION AT THE CAMBRIDGE SHOW, 1922.

THE Forestry Exhibition held in conjunction with the Royal Agricultural Society's Show was, from an educational view, quite up to the standard of previous years, more especially in the Non-Competitive Section. In the classes for competition entries were few. This is attributed to the difficult conditions prevailing which oblige landowners to economise in some form or other ; certainly exhibiting is an expensive hobby, although it must be admitted it is most beneficial, and in Forestry a good guide in securing knowledge ; it is therefore greatly to be regretted that estates should curtail in this branch of their expenditure.

This exhibition has always, in my experience of many years, appealed strongly to the general public, at least by the appearance of the overcrowded tents, and the numerous questions one has to answer ; it therefore becomes us to make this branch as attractive as possible, and endeavour to encourage estates to make entries. It might be better if the schedule were revised, some classes deleted, and others added.

The Classification at Cambridge was as follows :—

Class 1. For Specimens of Oak, Elm, Ash and Beech Timber. No Entry.

Class 2. For Specimens of Larch, Spruce and Scotch Fir. No Entry.

Class 3. For Specimen of any other sort of hardwood or broad-leaved timber. No Entry.

Class 4. For Specimen of any other sort of coniferous timber. No Entry.

Class 5. For Collection of planks of home-grown woods, not necessarily grown on Estate of Exhibitor, and open to Timber Dealers. One Entry.

This was disappointing. Perhaps it was not generally known that Timber Dealers could compete. Colonel H. Ramsden Jodrell, C.M.G., Taxal Lodge, Whaley Bridge, sent planks of Ash, Spanish Chestnut, Ash and Scotch Pine, and was awarded a a Commended Card.

Class 6. For Specimens of panels, or boards of various species polished or unpolished. No Entry.

Class 7. For Oak Field Gate for Farm use. One Entry.

Lady Ludlow, Luton Hoo, Luton, was awarded the Bronze Medal for a well-made gate, but the class of gate exhibited is not generally found on a farm. The cost of ironwork, £1 2*s.* 9*d.*, and making gate, £1 2*s.* 6*d.*, must be excessive.

Class 8. For Field Gate for Farm use of any other home-grown wood or combination of home-grown woods. Silver Medal to the Earl of Leicester, G.C.V.O., C.M.G., Holkham, Norfolk, for a gate made of Spanish Chestnut and Larch with Oak posts, cost of ironwork 13*s.* 10*d.*, making gate 6*s.* 6*d.* This latter item is open to question, but I was informed that the regular price is 5*s.* on this Estate for this work, the extra being added for increased care taken for exhibition. No other award was made in this class, but Lady Ludlow's exhibit was highly commended.

Class 9. For Wicket or Hunting Gate (Self-closing) manufactured from home-grown timber. Lady Ludlow's exhibit received a Highly Commended card. Details of cost were not given.

In the detailed cost of exhibit in these classes I note exhibitors add nothing for supervision ; this should be shown, or a percentage added to each item.

Class 10. For Tree Guard. No Entry.

Class 11. For Fencing of Home-grown wood, made in Great Britain, to be shown in not more than 9 yd. lengths. No Entry.

Class 12. For Fencing of Foreign Timber, creosoted or otherwise, to be shown in not more than 9 yd. lengths. Messrs. English Bros., Ltd., and Messrs. Richard Wade & Sons, Ltd., exhibited nine sections in this class. A Highly Commended card was given.

I consider Estates cannot undertake the erection of this fencing at the prices given under present-day circumstances. Even Railway Companies have gone over to wire.

Class 13. For Specimens showing comparative quality of any timber grown on different soils and situations. No Entry.

Class 14. For Specimens of stems and boards, &c. No Entry.

In the Non-Competitive Classes which filled the main building a very instructive and descriptive collection of exhibits was staged, containing all branches of Forestry, both practical and theoretical.

The main exhibit in this section was that of the School of Forestry of the University of Cambridge, which occupied half the shed, and must be the most complete and largest of its kind ever staged at a Royal Show. It was awarded the Special Medal for the best general collection. The Exhibit comprised a complete range of the specimens and educational appliances necessary for the teaching of the subject of Forestry on modern lines. The predominating feature was the Collection of Specimens of wood illustrating the useful and ornamental species of timber.

A very complete series was one of some 800 varieties in the form of four-foot boards suspended in dowel frames of simple design, enabling the specimen to be examined from both sides. The series comprised both British and Colonial Timbers. In addition there was a large and beautiful collection of fifty figured woods—burrs, crotches and ripple, bird's-eye, &c., notably a fine rippled board of Sequoia Sempervirens. Seeing that there are so many fine specimens of this variety in this country, one could not help thinking that it would be worth while to give it a trial as a forest tree. It is very fast growing and succeeds in most places.

A door of Brown Oak excited great interest. This is a practically unique specimen of that wood on account of the large size of the panels and deep colour.

Forest Protection was represented by two departments: (*a*) A collection of injurious insects, with examples of the damage caused by them, also by voles, rabbits, deer, cattle, horses, birds, &c. (*b*) A series of specimens of fungi, both parasitic and saprophytic, and parts of trees showing the nature of their attacks.

The anatomy of wood formed the subject of another section and was well illustrated.

Silviculture was represented by an interesting lot of seedlings, transplants, and young trees in pots and glass jars permitting the root to be seen; a long series of Poplars and Willows, and young trees of Conifers, also in pots; further, a quantity of fine photographs of selected trees and woodland scenery.

Miscellaneous specimens of wood, interesting by reason of their lightness or great weight, colour, extract, &c., formed the subject of another table, on which were also a collection of Indian woods used by Probationers for the Indian Forest Service and a herbarium relating thereto.

Some experiments illustrating the porosity, specific gravity, &c., and the method of identifying woods by means of their extracts were shown, one of the latter (extract of sandal wood) showing fluorescence, appearing yellow to transmitted light and blue by reflected light, being especially beautiful.

The FORESTRY COMMISSION, 22 Grosvenor Gardens, London, S.W., and ROYAL BOTANIC GARDENS, Kew, were awarded a Silver Medal, for a very fine exhibit comprising examples of the commoner conifers in their various stages of development—seeds, seedlings, transplants, and specimens of timber, together with particulars regarding the quantity of seed sown, number of plants raised, &c.

Other exhibits by the Forestry Commission comprised forest insect pests, with specimens of plants and timbers showing damage done; cones and foliage of various kinds of conifers; fungus pests, with specimens showing damage done; examples of good and bad pruning; photographs of British Woodlands; map showing Forestry Commission Acquisitions; Seeds of various kinds of Forest trees; also a Diagrammatic Model of a Normal Forest with a normal series of age gradation. The model represents a forest of 320 acres, each annual cut being 5 acres; the whole area being cut over and regenerated in 64 years. This model attracted a good deal of attention. I doubt whether the practical man will agree with the remarks on thinning—in fact, I am sure he will not.

The ENGLISH FORESTRY ASSOCIATION, LTD., Imperial Institute, South Kensington, also gained a Silver Medal, for a very interesting exhibit, including a selection of Forestry tools, samples of street paving blocks made from British Timber: (*a*) new; (*b*) worn; samples of tool handles made from home-grown timber; specimens of British Empire timbers; a collection of fine photographs; some beautiful samples of British Oak in the shape of panelling, &c. Also a "Brown Beaver" Portable Motor Drag Saw, a Clayton Gassing Machine for the destruction of vermin, a Methuen Sawdust Stove, a Cameo Sack Holder, examples of the various modes of erecting wire netting showing the comparative costs, the advantages of using wood preservatives, showing sections of posts and fencing, (*a*) treated, (*b*) untreated. One was very much struck with the Brown Beaver saw for reducing logs. When this is fully fitted for service, it should be an asset for estates, which are regularly converting. It is generally found, especially in wind-falls, that one has trees too large for the saw bench. These are mostly isolated, and in selling, a reduced price has to be taken. The new method gets over this difficulty, but to take up these labour-saving appliances, it is essential they should be used regularly, and to do this estates will, I fear, have to trade.

LIVERPOOL CORPORATION WATER WORKS, Lake Vyrnwy Estate, per Lieut.-Col. J. H. Forrester Addie. This exhibit was outside the main building, and attracted the attention it fully deserved; it was an entirely new feature, which fully demonstrated what is really required for estates having a large area of thinnings on hand. It is generally found that it is difficult to sell them; one does not care to admit the fact, but it is so, that the poles from the first thinnings are more often than not allowed to lie and rot in the woods. Although the demonstration was entirely composed of Douglas, there should be no reason why other species could not be used in the same manner, more so if more labour is involved and the article creosoted; it is certainly open to question that Douglas poles last longer in the green state than when seasoned.

The annual thinnings from such an area amount to some 900 tons. It has been decided to convert the thinnings into hurdles, and those poles which are unsuitable for hurdle-making and other waste wood into woodwool. The Corporation have for some time been making these hurdles for their own use, such as fencing plantations and sheep fencing, and they proved so satisfactory on the hills, in some cases at the high elevation of 1,500 ft., that they have decided to put them on the market. Seventy-five hurdles can be loaded into a 10-ton truck, the average weight of the hurdles being 45 lb. each, and the price 2*s*. 3*d*. to 2*s*. 6*d*. each.

There were also on view samples of soil and turf from the area under afforestation, plots containing trees showing growth of conifers annually when planted at high altitudes, samples of woodwool made from thinnings of coniferous plantations, diagram maps of planted areas, and a demonstration of conversion of coniferous timber to estate uses. In the leaflet supplied to all making enquiries on hurdle-making the Corporation say that, in conjunction with the Development Commissioners they have entered into a large Afforestation Scheme embracing 7,000 acres.

The award of a Silver Medal to this exhibit was fully justified.

W. PAULGRAVE ELLMORE, The Willows, Saxby Street, Leicester, exhibited a fine collection of twelve new varieties of basket-making willows growing in boxes; cricket-bat willows growing in boxes (Satix Cærulia); white, buff and unpeeled willows graded in sizes; white, buff and brown sticks for basket furniture; knives for willow-cutting; peeling and stripping machines; tools used in willow cultivation; special chain for planting willows; special tool for grubbing up old heads; special tying or bundling machines; bundle of willow peelings, now a waste product, except for manure; and photographs of willow-peelers at work. Truly a magnificent display of willow culture. Awarded a Silver Medal.

THE EARL OF LEICESTER, G.C.V.O., C.M.G., Holkham, Norfolk, was awarded a Bronze Medal for his exhibits of specimens of Panels and Articles of Furniture, comprising Bedstead ends from Ilex and Spanish Chestnut; Scotch Pine Door and Window Frame; an Oak Door, &c.

MESSRS. BEN REID & CO., Aberdeen, exhibited a Portable Canvas Shelter, transplanting boards, trestles for ditto, notching spades, Schlich's, Mansfield's and Learney's patterns, semicircular spade, planting spear, planting mattock, screefing iron. The action of this firm in exhibiting at the "Royal" all the way from Aberdeen should be the means of inducing English nurserymen to take up the matter at Newcastle-on-Tyne next year. Awarded a Bronze Medal.

LIEUT.-COLONEL E. R. PRATT, M.C., Ryston, Norfolk, exhibited 26 Poplars, 3 Willows, 2-year-old and 7-inch cuttings in pots. This exhibit was not catalogued or would have had a more conspicuous place in the tent.

MESSRS. CHRISTY & PENNY, LTD., 222 Strand, London, W.C., created great attention with their "Wade" petrol-driven portable cross-cut sawing machine, for use in field, forest or timber yard.

The Stewards, Mr. Charles Coltman-Rogers and Mr. William Dawson, are to be congratulated on the excellent arrangements and staging of the exhibits. The great courtesy they extended to the various exhibitors, and also to myself, was fully appreciated.

W. R. BROWN.

Parkside,
Heckfield, Basingstoke.

REPORT OF THE JUDGES ON THE PLANTATIONS AND NURSERIES COMPETITIONS, 1922.

THIS year this Competition was confined to the counties of Cambridge, Oxford, Buckingham, Huntingdon, Hertford, Essex and Middlesex. Some of these counties, as is well known, are not characterised by being well wooded, and in point of fact the entries all came from Cambridge, Buckingham and Hertford. There were 16 entries in all, a somewhat disappointingly small number, accounted for largely by the fact that on many estates the woodlands are still suffering from wartime treatment, or lack of treatment.

In the east of England the rainfall is low and many of the soils are light, and an outstanding feature of the inspection of the woodlands was the poor growth of Japanese larch and Sitka spruce under these circumstances, in comparison with the position of these trees in districts of higher rainfall and greater humidity of the soil.

Class I. Stage A.—This class is confined to hardwoods as the final crop, which have been weeded or lightly thinned. In this Class the Silver Medal was awarded to Colonel Abel H. Smith, Woodhall Park, Hertford, for Alexander Wood, 14 years old, having an area of 10½ acres, situated on light soil in the parish of Bramfield. This wood was established by pit-planting, the mixed conifers being set out 3–4 ft. apart, with hardwoods (chiefly oak and sycamore) at about 12-ft. intervals. The altitude is 350 ft. and the average rainfall about 26 in. The wood was established after hornbeam underwood. There is a row of Colorado Douglas firs along the margin, which, as is usual with this variety, are showing indifferent growth. The density of the crop on the whole is very good, and in due course, when the conifers have been removed, the hardwoods will have a chance to grow up and form the permanent crop. Some relief should be given to the hardwoods at an early date.

The Bronze Medal in this class was awarded to the Duke of Wellington for a wood on his Standon property. Here also in 1906–7 the trees were pit-planted 3½ ft. apart, at a cost of £10 2*s*. 6*d*. per acre, plus £10 14*s*. 6*d*. for fencing. The annual cost of cleaning and beating up for the first 4 years is given as 7*s*. 6*d*. per acre. The wood, which is on clay overlying chalk, is almost pure oak with a few ash intermixed, those planted being supplemented by many others through natural regeneration. The trees have been pruned of their side branches up to a height of about 6 ft., and altogether it is quite a promising wood, although there is considerable evidence of damage by rabbits, especially to the ash.

Class 2, Stage B, comprising hardwoods up to the completion of the second thinning, produced only one entry. This was a wood of 6 acres in extent, about 42 years old, on clay overlying chalk, which had been established by inserting the trees 4 ft. apart in pits. This wood is called Whitehill, the property of the Duke of Wellington, and to it the Judges awarded a Silver Medal. The cost of planting and fencing is not known. At present it comprises a mixture chiefly of ash and larch, and although it will be possible to thin out the larches and leave a pure wood of ash as the final crop, it is more likely that the best larches will be retained to the end of the rotation. Wherever a sufficiency of light reaches the ground—as, for instance, where a tree or two has been blown down—self-sown ash are rapidly establishing themselves, so that it would appear to be an easy matter to regenerate the area naturally in this way. Up till about 15 years ago this plantation was somewhat neglected, with the result that the ashes, which are the principal hardwood. crop, are very much drawn and rather curtailed in the crown, but still they are fine clean stems which will ultimately produce a large quantity of most valuable timber. Relief by thinning is wanted at once.

In Class 3, Stage A, which comprises conifers up to the first thinning, the Silver Medal was awarded to Colonel Abel H. Smith for a wood 12 years old, established by pit-planting 3 ft. apart. This wood, called Black Buck, consists entirely of larch, which are showing good growth, although the severe blizzard a few years ago has left its mark in certain parts of the wood.

In this class the Bronze Medal was awarded to a wood belonging to Mr. Reginald S. Hicks, of Wilbraham Temple, Cambridge. The wood in question—Heath Plantation—is surrounded by tillage land, and is situated on very light sandy soil overlying chalk close to the London Road, about 1 mile from Six Mile Bottom railway station. It was planted 16 years ago by pitting, the land being semi-derelict and growing large quantities of couch. The average annual rainfall is given as about 23 inches. The plants were inserted 4 ft. apart and had to be protected by wire netting against rabbits. But rabbits are now all too common in the wood and have done a certain amount of harm to the larch. With the larches is mixed spruce and Scotch fir, the intention being in a few years to remove everything but the larch and to underplant with beech. If this is done, very careful protection against rabbits will be necessary, as this tree is specially liable to attack. There is a certain amount of canker and larch aphis in this wood, and the larch shoot moth caterpillar is also considerably in evidence. Density is excellent, except at the south end, where the soil is very thin.

There were no entries in Class 4, which comprises conifers as the final crop in the stage up to the completion of the second thinnings.

Class 5, comprising a mixed plantation of hardwoods and conifers in Stage A, produced three entries, and the Judges awarded the Silver Medal to the Duke of Wellington for a wood known as Badger's Eye, 10 acres in extent, situated on gravelly clay over chalk about 3½ miles from Standon station. This wood, which has a south to south-east exposure, was planted in 1900–1, the whole of the trees being pit-planted 4 ft. apart. The initial cost is put at £10 15*s*. per acre. The work was done by contract, the trees being inserted at the rate of 1,360 larch, 680 Scots pine, 170 oak, 170 ash, 170 elm, and 170 beech per acre. This means that the hardwoods were inserted about 16 ft. apart. Of the hardwoods the elms are growing best and are promising to be very fine trees. Rabbits, however, have done a certain amount of damage to the ash and beech. Some spruce are now largely suppressed, and the hardwoods want relief by thinning, which ought to be taken in hand at once. The density of this wood is very good, and altogether it is a fine, promising plantation. To this wood the Judges awarded the special Gold Medal given by the Royal English Arboricultural Society for the best plantation submitted for inspection.

The Bronze Medal in this class was awarded to Colonel Abel H. Smith for a wood of 7¼ acres on light soil formed by planting in pits, conifers 3 ft. apart and hardwoods at 12-ft. intervals. This wood, known as Long Walk, has not yet been thinned, being very dense in places. Immediate attention in respect of this is wanted.

A third entry in this class was supplied by Mr. James Binney of Pampisford Hall, Cambridge. This was a wood some 6 acres in extent, 10 years of age, about 70 feet above sea-level on old fen land, which had been trenched before the trees were planted in pits. The initial cost was given at £5 an acre, but this could not have included the cost of trenching. The upkeep for the first four years was put at £15 per acre. The mixture comprises white spruce, which is growing fairly well, common spruce, suffering from drought, a certain number of Turkey oaks, and other hardwoods. The stocking was very patchy, many of the trees having died. In one division of this wood, which had been planted after an old lucerne ley, spruce, Scots pine, and larch were the predominant species, with a certain number of *Thuya gigantea* along the south-west side, and a sprinkling of yews. Willows had also been planted and had failed. The larches were growing very badly, the most promising species being Scots.

pine. The future of this wood is rather uncertain, and it is an area that would appear to suit hardwoods better than conifers. The feature of this estate is a very remarkable collection of well-grown conifers, of which details are given in the Report of the Conifer Conference of 1891.

In Class 6, for a mixed wood of hardwoods and conifers in Stage B, that is to say, up to the time of the second thinning, the Silver Medal was awarded to the Duke of Wellington for a wood, about 5 miles from Ware, of 7 acres on clay over chalk, 45 years old, which was established by pit-planting 4 ft. apart. Records do not exist of the cost of the planting, nor of the age of the plants. The wood is known as Hanging Wood, the hardwoods being principally oak and beech, with some elms. It shows fine density, and the larches are remarkably free from disease. There are now about 500 trees to the acre, the larches at breast height are about 4 in. quarter girth measure, and having a cubic content of about 6–7 ft. Of the hardwoods, the elms seem to be growing best, but they and other hardwoods, especially on the west side, want relief by thinning.

In this class the Bronze Medal was awarded to Colonel Abel H. Smith, for a plantation known as Ryscott's Wood, 5½ acres in extent, situated on light soil, 26 years old. The trees, which were furnished by the estate nursery, were inserted by pit-planting 3 ft. apart. Originally this wood consisted of larch, oak, and sycamore, the larch being about 6 ft. apart, and about 10 years ago it was beaten up with Scots pine. Growth is fairly good here, but an insect has damaged a considerable number of the larches, working beneath the bark close to the base of the tree. We have now had an opportunity of identifying this pest, which proves to be the larva of *Tetropium Gabrieli*, var. *Crawshayi*, which is described in Volume VIII, page 277, of the *Quarterly Journal of Forestry.*

Class 7 is defined as consisting of the best example showing systematic management of an existing woodland area, including the renovation and conversion of an unprofitable wood into a profitable condition. In this class there was only one entry, namely that of Colonel Abel H. Smith, whom the Judges considered well worthy of receiving the Silver Medal. The woodlands on this estate were originally largely used for the growth of hornbeam coppice, which was sold to maltsters for fuel; the proximity of Ware, with its extensive maltings, affording an excellent market for the material. When this kind of fuel ceased to be used, and when consequently such coppice wood became unprofitable, the problem arose as to what should be done with the large area of this class of woodland. It was determined to select certain areas, which were clear-felled and planted up either with pure conifers or with a mixture of these with ash and oak. About 5 to 10 acres are annually planted on the Woodhall Estate in this way. The ground that is thus cleared of hornbeam coppice is rich in humus and fairly clear of weeds, and young trees grow well on it. There is a large area to be dealt with, and in the opinion of the Judges the owner has tackled a difficult problem in the only way that is likely to give a satisfactory solution.

In Class 8, which is defined as a plantation of not less than 2 acres consisting of exotic conifers not less than 5 years old, there were three entries, and the Judges awarded the Silver Medal to Viscount Burnham, Hall Barn Estate, about 2 miles from Beaconsfield, for a wood about 6 acres in extent on peaty soil overlying gravel. This wood is 7 years old and followed an underwood. The trees were 4 years old when planted, the distance apart being 4 ft. Douglas fir and Sitka spruce are the two main species, which are planted in groups, and both are making remarkably good growth, the Douglas firs being now about 20 ft. high and the Sitkas about 17 ft. in height. There were also some *Thuja plicata* which were doing fairly well, although not so promising as the other two species. The area has suffered in places from frost, which has chiefly attacked trees growing in slight depressions, but now they are getting up they will soon be beyond the frost zone. On this estate there were also some remarkably fine examples of well-grown beech and larch, and an arboretum has been established which promises to be interesting.

The Bronze Medal in this class is awarded to Mr. T. Musgrave Francis, of Quy Hall, Cambridge, for a plantation 2 acres in extent situated on chalky loam about 20 ft. above sea-level. The rainfall here is on the average only about 23 in. The area in question lies along the side of a stream, and was planted 11 years ago on land that had previously been under agricultural cultivation. The method of distributing the trees was to plant oak, Japanese larch and Sitka spruce in every fourth row, the rest of the wood being filled up with common larch, Douglas fir, common spruce and Scots pine. In this district of low rainfall the Japanese larch were showing poor growth, many of them having died altogether. The common larch was growing much better, confirming what is well known, namely, that the Japanese larch resists drought very badly. The Douglas firs were yellow in the foliage, showing the effects of too much lime in the soil. Like the Japanese larch, the Sitka spruce was evidently suffering from deficient rainfall, the growth of the common spruce being much better. The tree that had grown best here is Scots pine, probably the most satisfactory species of all, where the soil is dry and the rainfall light. This wood, in fact, teaches as much from failure as from success.

In Class 9, which is designed for the best-managed woodland on an estate of not less than 1,000 acres in area, account to be taken of the production of timber, ornamental planting, planting for sporting purposes, and improvement of residential amenities, with the proper management of hedgerow timber, there was one entry, namely that of Mr. R. S. Hicks, of Wilbraham Temple, Cambridge. While Mr. Hicks' woods are interesting, and have received much personal attention from the owner, the Judges did not consider they were quite up to the standard of a special medal, but they have pleasure in awarding the Second Prize, namely a Silver Medal, to this entry. The gale of 1916 did much damage to the woodlands on this estate, and necessitated a great deal of replanting. Mr. Hicks took a personal part in the work, and performed much of the thinning operations with his own hands. There is a small nursery on the estate which supplied a good deal of the material, and it is interesting to note that the fertility of this nursery is to a certain extent maintained by sowing mustard on certain parts and incorporating the produce for the purpose of forming green manure. In the neighbourhood of Mr. Hicks' residence the woodlands are managed with a view of preserving amenities, that is to say, when replanting is necessary it is done in groups so that the general outline of the woods shall not be broken. In this wood a considerable number of spruces and larches are in a very unhealthy condition or are altogether dead, the cause, apparently, being sun scorch of the bark due to the sudden exposure of the stems owing to wind-blow. One of the most interesting woods on this estate consists of hardwoods, such as sycamore, ash and poplar, and which is now in the pole-wood stage with fine clean stems that are now requiring thinning. Mr. Hicks had the intention in the coming winter of planting a piece of fresh ground with Sitkas spruce, but after seeing the condition of this species at Quy he decided that the prospects of success were not sufficiently good to warrant him introducing this species on a large scale, and he will probably now substitute Corsican pine and common larch as the main crop.

On the lawn close to the residence is a fine London plane, which girthed 12 ft. at 4½ ft. from the ground. As is usually the case, the foliage was much attacked by *Gloeosporium nervisequium*, which was causing premature leaf-shedding, with consequent disfigurement of the lawn.

In conclusion, the Judges beg to offer the following observations on the subject of mixing conifers with hardwoods, where the latter are intended to form the final crop.

On paper, that is to say, *in theory*, it looks well to insert one hardwood at say 12 to 16-ft. intervals, and to fill up with conifer nurses, as is shown below, where " H " is a hardwood and " C " a conifer.

H	C′	C	C′	H	C′	C	C′	H
C′	C	C	C	C′	C	C	C	C′
C	C	C	C	C	C	C	C	C
C′	C	C	C	C′	C	C	C	C′
H	C′	C	C′	H	C′	C	C′	H
C′	C	C	C	C′	C	C	C	C′

But under such an arrangement there is no latitude as regards choice, the hardwoods, whether they grow well or ill, must all be retained as the final crop. But it is well known that trees do not all grow alike well, some being constitutionally vigorous and others constitutionally weak. It seems to us, therefore, that in order to give some opportunity for selection, the conifers marked C′, in immediate proximity to the hardwoods, might well be replaced by hardwoods, so that the choice would be given of selecting the best hardwood of five. This would add something to the original cost, but would ensure finer specimens to stand as the final crop. The final interspacing of the hardwoods would also not be so perfect as in the usual practice, but it seems to us that these drawbacks are more than counterbalanced by the superior vigour of the trees that will ultimately form the crop of hardwoods.

The Judges take this opportunity of making acknowledgment of the kindness and efficiency of Mr. William Dawson, Reader in Forestry at the University of Cambridge, in making excellent arrangements for their tour of inspection, and also for the help given by his assistant, Mr. Cox.

R. J. McGibbon.
Wm. Somerville.

REPORT OF THE JUDGES ON THE ORCHARD AND FRUIT PLANTATION COMPETITION, 1922.

THE Judges were given a free hand as to the method of scoring and pointing. Six heads had been suggested as follows :—

A. System of Planting.
B. Pruning and Shape.
C. General Vigour and Productiveness.
D. Freedom from Pests and Diseases.
E. Land Cultivation.
F. Selection of Varieties.

To these were added two more :—

G. Commercial and Economical Aspect.
H. General Appearance.

The Maximum points under each of these heads were :—

A.	15	E.	15
B.	10	F.	5
C.	15	G.	15
D.	15	H.	10

making a total of 100.

This method of scoring was found to work very well.

The Judges' Awards were as follows :—

CLASS 1.	1st	J. C. Faircliffe, Burwell.
CLASS 2.	1st	R. Stephenson, Burwell.
CLASS 3.	1st	James R. Smith, Willingham.
	2nd	C. T. Chivers, Cottenham.
	Res.	Harry Feast, Haddenham.
CLASS 4.	1st	Croxton Fruit Farm, Croxton.
	2nd	Roger C. Cole, Over.
	Res.	J. B. Crofts, Elm, near Wisbech.
CLASS 5.	1st	Robert Ingle, Ltd., Kingston.
CLASS 6.	1st	J. B. Crofts, Elm, Near Wisbech.
	2nd	F. Rawlings, Emneth, Wisbech.
CLASS 7.	1st	F. Lucas Handley, Cottenham.

The entries were somewhat disappointing, Classes I and II (Orchards under grass) and V (Bush fruit) having only one entry each, while in the Strawberry classes VI and VII there were only seven entries, and three of these were distinctly inferior. Only Classes III and IV (Top Fruit and under crops on cultivated land) were really well supported, the class for Plantations under 10 acres having 7, and for those over 10 acres 8 entries. We noticed several well managed plantations that might have been entered, particularly in the Wisbech area.

Without going into detailed individual criticism we should like to make a few general remarks on what we saw.

The chief criticism we have to make on the area as a whole is the lack of good quality dessert apples. The aim of growers appears to be " Bulk," with little consideration as to " quality." Doubtless this has paid best in the past, and is doing so at the present time, but there is a possibility of the over production of culinary apples, particularly of the early varieties, as wherever we found new plantations, this class of apple predominated. We were told almost consistently that good quality dessert apples would not crop, but wherever we came across such varieties as Cox's Orange Pippin, James Grieve, Beauty of Bath, Gladstone, and Blenheim, they were carrying fair crops for the season. The fen lands and the deep rich soils would probably not produce dessert fruit of a good colour and suitable size, but the land less rich should do so. At Croxton, where the soil is distinctly heavy, we saw a few Cox trees carrying a full crop.

We suggest that the growers generally in this area are growing too few varieties of Apples.

All varieties of Plums appear to be carrying good crops.

The Strawberries, with the exception of the prize winners, were disappointing.

Careless and Whinham's were the best gooseberries seen, the former growing to a good size, and the latter cropping most consistently.

Pears are not largely grown, the chief varieties we noticed being Conference, Fertility, Pitmaston, and Hessle.

Some of the smaller growers appear to plant too many kinds of fruit, with the result that they do not grow enough of any one kind. We noticed generally a lack of ingenuity and progressive methods and ideas, especially with regard to the economical cultivation of the ground, spraying apparatus, and systems of carrying out the spraying operations.

Most of the Plantations entered for competition were fairly free from Pests and Diseases. One garden was badly affected with leaf scorch, and in one a rather serious attack of capsid bug was seen. Psylla was also rather prevalent, and in some cases fully accounted for lack of crop. Grease banding in many cases was done directly on to the tree, no paper bands being used. Aphis was conspicuous by its absence, except in the case of Red Currants.

One of the most interesting exhibits was the only entry in Class I (under 10 acres grass orchard). This had been allowed to grass down, and was stocked with poultry, divided into small pens. This plantation was carrying a good crop of fruit, of good varieties and quality, on dwarf trees. Previously, when the land was cultivated, the trees were badly attacked by leaf scorch, which had now almost entirely disappeared.

The winning exhibit in Class IV is deserving of special mention. It consists of 21 acres of Apples and Plums, with fruit on every tree, and in most cases a full crop.

We consider that the competition is well worth while from an educational point of view. Criticism and advice on our part was in many cases specially asked for by the competitors, and more than one said that he was glad to have entered on that score alone.

In the event of future competitions being held we would make the following suggestions :—

> THAT the whole of the Plantations and Orchards owned or occupied by a competitor be included in the entry, with no age limit.
>
> THAT there be classes for (1) 10 acres or under ; (2) over 10 acres and under 25 ; (3) over 25 acres and under 40 ; (4) over 40 acres and under 75 ; (5) over 75 acres.
>
> Points for judging to be the same as this year, as given above.

Finally, we desire to express our thanks to all those who acted as our hosts during our tour, and to Mr. E. C. Boughton, Secretary of the Federation of British Growers, and Mr. Paskett, Horticultural Instructor, Cambridgeshire, for the admirable arrangements made for the tour.

Everything went without a hitch, and our task was made as easy as possible for us by these arrangements.

F. P. NORBURY.
W. J. THOMAS.

REPORT OF THE COUNCIL TO THE ANNUAL GENERAL MEETING OF GOVERNORS AND MEMBERS OF THE SOCIETY,

HELD AT THE

ROYAL AGRICULTURAL HALL, ISLINGTON, LONDON, N.,

On WEDNESDAY, December 6, 1922, *at* 2.30 *p.m.*

Membership.

1. The Council have to report that the list of Governors and Members has undergone the following changes since the Annual General Meeting on December 7th, 1921: 39 new Governors (including 12 transferred from the list of Members under By-law 7), and 1,100 new Members have joined the Society, and 8 Members

have been re-instated under By-law 14; whilst the deaths of 3 Life Governors, 8 Governors, 2 Honorary Members, 112 Life Members, and 201 Members have been reported. 80 Members have been struck off the books under By-law 12, owing to absence of addresses; 67 Members under By-law 13, for arrears of subscription; and 8 Governors, 2 Life Members and 245 Annual Members have resigned.

Deaths of Governors and Members.

2. By the deaths of Lord Middleton, Mr. John Rowell, Mr. D. T. Alexander, Mr. Lewis Dodd, and Sir John H. Thorold, Bart., the Society has, in the last few months, sustained the loss of five of its governing body. Lord Middleton, a prominent breeder and exhibitor of Shire horses and other pedigree stock, first became associated with the Society as a Governor in 1875; he joined the Council in 1899, became a Trustee in 1904, and was twice President, first in 1905 when the third show was held at Park Royal, and again in 1912, the year of the show at Doncaster. Mr. Rowell, as the representative of Huntingdonshire, had been an active member of the Council for nearly seventeen years, during which period he served continuously as Steward of Heavy Horses at the Annual Shows. Mr. D. T. Alexander, as a member of the Local Committee in connection with the first post-war show, at Cardiff, did an immense amount of work for the Society; he was elected to the Council in 1910 for the division of Glamorgan. Mr. Lewis Dodd was elected to the Council in 1921, as one of the representatives of the Division of Cheshire. Sir John Thorold, who was a Trustee, passed away in October last at the age of eighty. He joined the Society as a member in 1868, and had been on the Council for forty-one years, during which period he rendered invaluable services to the Society in almost every department of its work, occupying the Presidential Chair in 1895, in which year the show for the first time was held in Darlington. He was Chairman of the Journal Committee and of the Committee of Selection from 1896 till February, 1921, when, in consequence of advancing years and failing health, he felt it incumbent upon him to retire and give place to younger men. Notwithstanding the fact that he was no longer a chairman, he continued to attend the Committee and Council meetings until April this year, and his interest in the work of the Society was maintained till the end.

3. The Council have also to record the death of Mr. William Carruthers, F.R.S., shortly after entering his ninety-third year. He was the Society's first Consulting Botanist, a position he held for nearly forty years. On his retirement in 1909 he was elected an Honorary Member in recognition of the valuable services he had rendered to British Agriculture. Another

Honorary Member has been lost by the death of H.H. The Maharaja of Kolhapur, G.C.S.I., G.C.V.O., who had been associated with the Society since 1889, and took great interest in its work. The Honorary Membership was conferred upon His Highness in 1902 as a mark of personal respect to him and as a compliment to the great territory he so worthily represented. His Highness was present at the General Meeting in the Carlisle showyard in 1902, and received his Honorary Member's Badge at the hands of the President, the late Prince Christian.

4. Amongst other Governors and Members whose loss by death the Society has to deplore are: H.R.H. The Duchess of Albany; the Marquis of Breadalbane, K.G.; the Earl of Gosford, K.P.; the Earl of St. Germans; Earl Spencer, K.G.; the Earl of Westmorland; Cassandra Countess of Rosse; Viscount Cobham; Lord Bolton; Lord Heneage; Lord Manton; Lord Sinclair; Lord G. M. Pratt; Lord Ernest St. Maur; Lady Middleton; Lieut.-Col. the Hon. H. G. Henderson, C.V.O.; Sir T. I. Birkin, Bart.; Sir H. R. Brisco, Bart.; Sir Alex. H. Brown, Bart.; Sir Charles D. Cave, Bart.; Sir Edward E. Cooper, Bart.; Sir A. J. Fludyer, Bart.; Sir Wyndham Hanmer, Bart.; Sir John Scott, Bart.; Sir Prince Smith, Bart.; Sir J. L. E. Spearman, Bart.; Sir Beville Stanier, Bart., M.P.; Sir R. V. Vassar-Smith, Bart.; Sir Lancelot Hare, K.C.S.I., C.I.E.; Mr. C. B. Balfour; Mr. R. A. Bayford, K.C.; Mr. W. H. Bradwell; Mr. E. James Bridgford; Mr. George Cadbury; Mr. Robert Bowcher Clarke (elected in 1862); Mr. Irwin E. B. Cox; Mr. Frank W. Garnett; Mr. J. A. Henryson-Caird; Mr. G. Graily Hewitt; Mr. A. W. Lepper; Mr. A. H. Leslie-Melville; Mr. H. S. J. Maas; Mr. A. E. Marlow; Mr. Walter Morrison (elected in 1862); Mr. G. W. Strode, and Col. W. N. Tufnell.

Number of Governors and Members on Register.

5. The above and other changes bring the total number of Governors and Members now on the Register to 13,325, divided as follows:—

286 Annual Governors;
139 Life Governors;
10,553 Annual Members;
2,325 Life Members;
22 Honorary Members;

13,325 Total number of Governors and Members, as against a total of 12,918 on the Register at the time of the last Annual Report.

Presidency.

6. The Council have unanimously decided to recommend to the Annual General Meeting the election of Lieut-Col. E. W.

Stanyforth, of Kirk Hammerton Hall, York, as President of the Society, to hold office until the Annual Meeting in 1923.

Changes in the Council.

7. To fill vacancies which have occurred during the year, H.R.H. The Duke of York, K.G., and Lord Ailwyn have been elected Trustees, Lord Harlech has been elected a Vice-President, and Mr. Hubert D. Alexander and Sir Douglas Newton, K.B.E., M.P., have been elected ordinary members of Council for the Divisions of Glamorgan and Huntingdonshire respectively.

Annual Election of Council.

8. The Members of Council who retire by rotation at the next Annual General Meeting are those representing the electoral districts of Group B., viz. Buckinghamshire, Devon, Durham, Essex, Herefordshire, Leicestershire, London, Nottinghamshire, Rutland, Shropshire, Suffolk, Surrey, Wiltshire, Yorkshire—West Riding, and South Wales. Governors and Members resident in those districts have been communicated with, and the customary procedure is being followed for the election or re-election of representatives for the divisions concerned. Elections are also taking place in Cheshire—where there are two vacancies to be filled through the death of Mr. Lewis Dodd and the resignation of Mr. G. Norris Midwood—and in the Division of Cambridgeshire, which, owing to its increased membership, is now entitled, under By-law 83, to elect one additional representative.

Accounts.

9. Under the By-laws, the balance-sheet has to be presented for consideration at the Annual Meeting. The Council therefore beg to submit the Balance-sheet, with the Statement of Receipts and Payments for the year 1921. These Accounts were published in Vol. 82 of the *Journal* issued to Governors and Members this year, having been certified as correct by the Auditors appointed by the Members and by the professional Accountants employed by the Society.

Legacy to Society.

10. The Council have to acknowledge the receipt of a legacy of £160 under the will of the late Miss Thurtell.

Investments.

11. Acting upon a recommendation of their Finance Committee, the Council have disposed of the Society's holding in the 5 per cent. War Loan and re-invested the proceeds in Conversion 3½ per cent. Loan (1961).

Cambridge Show.

12. For number of entries and all-round excellence of exhibits, particularly in the live-stock sections, the third Show held at Cambridge, under the presidency of H.R.H. The Duke of York, has rarely been equalled. Thanks to the continued generosity of the Breed societies and the contributions from the Local Committee, the Society were able to offer in prizes the record sum of £13,800, or £400 more than at Derby last year. Entries of live stock of all descriptions reached the unprecedented total of 4,200. Included in this number were 1,547 entries of cattle, and 1,164 entries in the classes for pigs. The display of agricultural machinery was well above the average, and no fewer than 83 " new implements " were entered for the Society's Silver Medals.

H.R.H. The President was on the ground at an early hour on the opening day, and, informally, made a tour of the show, occupying several hours. His Royal Highness on the Wednesday paid an official visit to the Exhibition, during which he presided at the General Meeting of Governors and Members. Resolutions were passed at this meeting acknowledging the cordial reception given to the Society by the Mayor and Corporation of Cambridge, and the valuable assistance rendered by the Cambridge Local Committee. Thanks were also expressed to the Railways—particularly to the Great Eastern Company—for the excellent transport facilities afforded by them.

The weather was most unfavourable, for rain fell more or less heavily at intervals on each of the five days, and a gale that swept over the showyard on the Wednesday night caused some damage to the property of exhibitors and the caterers, several marquees being blown down.

During the whole show the number of persons that passed the turnstiles was only 92,352, as compared with 111,658 when the Society last visited Cambridge. But for the adverse climatic conditions the numbers would undoubtedly have been much greater. However, notwithstanding the small attendance, it is anticipated that the expenditure will be more than balanced by the receipts. In accordance with custom, the Accounts will be placed in the hands of all those present at the Annual Meeting.

Orchards and Fruit Plantations.

13. For the first time in connection with the Society's Show a competition was organised in conjunction with the Federation of British Growers for owners of Orchards and Fruit Plantations. Twenty-six entries were made in the seven classes provided, and the Judges completed their tour of inspection in time for their awards to be made known during the show.

A similar competition will take place in 1923 for Orchards and Fruit Plantations situated in the Counties of Kent, Surrey and Sussex.

Railway Concession.

14. For the season of 1922, the Railway Companies reinstated the arrangements in operation prior to 1917 in regard to the conveyance at half-rate of unsold implement exhibits from agricultural societies' shows. The half-rate arrangement made in 1920 (after the Minister of Transport had received a Deputation on the subject) was restricted to live stock, and the restoration of the full pre-war concession is appreciated by the exhibitors of implements, machinery, etc.

Agricultural Machinery.

15. Application has been made by the Council for some portion of the Agricultural Grant of £850,000 to be applied to the encouragement of inventions of agricultural machinery, etc., and the Ministry of Agriculture have expressed their willingness to consider any definite application for a grant in aid of a particular scheme.

16. Consideration has been given to the question of trials of implements in the spring and autumn of next year ; but, in view of the conditions existing in the trade, it is felt that manufacturers are not in a position to undertake fresh production, and that it would not be possible for satisfactory trials to be organised at present.

Show at Newcastle-upon-Tyne.

17. The Eighty-second Annual Exhibition of the Society will be held on the Town Moor, Newcastle-upon-Tyne, from Tuesday, July 3rd, to Saturday, July 7th, 1923. The Local Committee which has been formed, under the Chairmanship of the Duke of Northumberland, has already made substantial progress with the preliminary local arrangements. This will be the fifth visit of the National Society to the Tyne-side city, and the occasion will be marked by the erection of a new Entrance Pavilion.

Prize List.

18. In the prize list, which will be on the customary comprehensive scale, the North Country breeds will have an extended classification. A handsome contribution to the prize-fund has been made by the Newcastle Local Committee. The County Agricultural Societies of Northumberland and Durham are withholding their shows in 1923, and in various sections at the "Royal" will offer Special Prizes, competition for which will be confined to the members of those two societies.

19. Offers of Champion and other prizes have already been received from the following Breed Societies:—Shire Horse Society, Clydesdale Horse Society, Suffolk Horse Society, Hunters' Improvement and National Light Horse Breeding Society, National Pony Society, Arab Horse Society, Cleveland Bay Horse Society, Hackney Horse Society, Dales Pony Improvement Society, Fell Pony Society, Shorthorn Society, Dairy Shorthorn Association, Lincolnshire Red Shorthorn Association, Hereford Herd Book Society, Sussex Herd Book Society, Red Poll Cattle Society, Aberdeen Angus Cattle Society, Galloway Cattle Society, Ayrshire Cattle Society, Blue Albion Cattle Society, British Friesian Cattle Society, Park Cattle Society, English Guernsey Cattle Society, English Jersey Cattle Society, English Kerry and Dexter Cattle Society, British Goat Society, Hampshire Down Sheep Breeders' Association, Suffolk Sheep Society, Kerry Hill (Wales) Flock Book Society, Lincoln Longwool Sheep Breeders' Association, Society of Border Leicester Sheep Breeders, Cotswold Sheep Society, Herdwick Sheep Breeders' Association, Swaledale Dales Bred Sheep Breeders' Association, Cheviot Sheep Society, Black Welsh Mountain Sheep Breeders' Association, National Pig Breeders' Association, Large Black Pig Society, Wessex Saddleback Pig Society.

Challenge Cups are again offered for the best Suffolk Stallion, for the best Percheron Stallion, for the best Percheron Mare or Filly, for the best Two-year-old Percheron Stallion, for the best Two-year-old Percheron Filly, for the best Riding Hunter, for the best Hack or Riding Pony, for the best Single Harness Horse, for the best Tandem, for the best Four-in-Hand Team, for the best group of one bull and two females of Dairy Shorthorns, for the best group of three Female Dairy Shorthorns, for the best Hereford Bull, for the best Sussex Bull, for the best Aberdeen Angus Bull, for the best Galloway animal, for the most points awarded in a combination of entries in the Aberdeen Angus Cattle Classes, for the best group of three Female British Friesians, for the best Kerry animal, for the best Dexter animal, for the best exhibit of Oxford Down Sheep, for the best exhibit of Shropshire Sheep, for the best exhibit of Ryeland Sheep, for the best Border Leicester Ram or Ewe, for the best group of Kent or Romney Marsh Sheep, for the best Large White Pig, for the best Middle White Pig, for the best Tamworth Pig, for the best Berkshire Pig, for the best Berkshire Boar, for the most points awarded in a combination of entries in the Berkshire Pig Classes, for the best Large Black Sow, for the best Gloucestershire Old Spot, best Gloucestershire Old Spot Boar, best Gloucestershire Old Spot Sow, for the best Wessex Saddleback Pig.

In the Poultry section Special and other Prizes are being contributed by the White Wyandotte Club, British Rhode Island

Red Club, Buff Orpington Duck Club, Barred Plymouth Rock Club, Buff Plymouth Rock Club, Indian Runner Duck Club.

In the Rabbit section Special and other Prizes are being contributed by the National Belgian Hare Club, National English Rabbit Club, Dutch Rabbit Club, Universal Angora Rabbit Club, Beveren Club, National Silver Rabbit Club, National Polish Rabbit Club.

Closing of Entries.

20. Intending exhibitors at Newcastle are reminded that the latest date for receiving entries of horses, cattle, goats, sheep and pigs is May 1st. Entries of Poultry, Rabbits and Produce close on May 21st.

Applications for space in the Implement, etc., Department must be made not later than March 20th.

Schedules and entry forms will be ready for issue early in the New Year.

Shows in 1924 and 1925.

21. As has already been announced, the Council have accepted invitations to hold the Show at Leicester in 1924 and at Chester in 1925.

Argentine Show Judges.

22. At the request of the Argentine Rural Society, the Council appointed the following gentlemen to proceed to South America to act as Judges at the Show held at Palermo in September last :—

Shorthorn Cattle.—Mr. John Gill, Thorn Farm, Stainton, Penrith.
Hereford Cattle.—Mr. W. S. Russell, Westonbury, Pembridge.
Aberdeen Angus Cattle and Clydesdale Horses.—Mr. Peter D. Robertson, Castlecraig, Nigg, Ross-shire.
Lincoln and Down Breeds of Sheep and Shire Horses.—Mr. Fred Money, Riversdale, Sleaford.
Pigs.—Mr. C. Howard Taylor, Middlewood Hall, Barnsley.

Mr. Russell also officiated as Judge at the Monte Video Show of the Uruguayan Society.

Chemical Department.

23. During the past twelve months the activity of the Chemical Department, as marked by the number of samples sent by Members for analysis, has shown, not the decrease that was expected, but an increase; for the number of analyses made is largely in excess of those of recent years. Indeed, the number, 518, is the highest recorded since the year 1906, and shows a great improvement on the figure of 448 for 1921. Of the samples sent, a considerable and increasing proportion has been of soils, viz. 67 as against 54 in 1921, and there is good reason to believe that these examinations have, in many cases, afforded very

useful guidance. There was also an increase in the samples of water submitted. Notwithstanding the provisions of the Fertilisers and Feeding Stuffs Act, abundant evidence is forthcoming of the useful rôle which the Society's laboratory can still play, and Members have, in many cases, shown themselves appreciative of this.

Fertilisers and Feeding Stuffs Act.

24. Attention was drawn by the Chemical Committee in February to the necessity of making strong representations in regard to the need for a new Fertilisers and Feeding Stuffs Act. A conference of representatives of kindred agricultural and trade bodies interested was called by the Society on February 23rd, when, after considerable discussion, it was resolved to constitute a Joint Committee to draft a new Fertilisers and Feeding Stuffs Bill. This Committee met on March 31st, and the matter was further discussed; but in view of the possibility of the Government taking action for the amendment of the Act, the Joint Committee has not since been called together. The matter is, however, being carefully watched, and, when developments take place, the Joint Committee will hold a further meeting.

Botanical Department.

25. The work of the Botanical Department during the year 1922 has proved to be very similar to that of the previous year. It was again characterised by an unusual number of enquiries regarding the weeds of both grass and arable land and requests for information as to suitable crops to replace the clovers which had failed so generally during the drought of 1921. Until midsummer comparatively few fungoid pests were received in the laboratory, but after this date enquiries became more numerous than usual. These dealt with practically all of the farm crops, though the damage to wheat caused the most concern amongst Members. Queries on the subject of grass-land management were not received on the scale which might have been expected after the unfavourable results shown by arable-land farming in 1921.

Zoological Department.

26. As in former years, the work of the Department has fallen into three sections: the giving of advice in cases of attack by insect pests; research into obscure points in the life-history of the pests; and the identification of zoological specimens of more or less general interest. The list of injurious insects reported is very extensive, especially among those injurious to fruit, but except during the dry weather of early summer, when the pests which accompany drought did extensive harm, the attacks were mostly local and sporadic.

The most striking feature of the later summer months was the prevalence of corn pests, frit-fly especially occurring to an extent never before experienced, successive broods continuing to injure oats right up to the harvest. The opportunity of making numerous observations on its mode of life was taken advantage of.

Animal parasites have again figured prominently among the specimens sent for identification, and further work has been done in verifying the facts recently ascertained with regard to the warble-fly and the bee-mite.

Governors' and Members' Privileges.

27. At their meeting in August the Council appointed a Special Committee to consider the whole question of Governors' and Members' privileges.

The recommendations of this Committee, adopted by the Council on November 1st, include the provision of more adequate luncheon-room accommodation in the showyard for Governors, the numbers of whom have increased from 268 at the end of 1916 to 425.

In addition to the use of the *unreserved* portions of the Grand Stand at the Horse Ring (provided there is room) free of charge, Governors will in future be given the first refusal, up to a date to be fixed each year, of the seats in the *reserved* portions of the Grand Stand upon payment of the ordinary charges.

Modifications have been made in the regulations governing the exercise of the privileges of chemical analyses in certain cases.

The Botanical, Zoological, Veterinary, Milk and Dairy, and Library privileges remain as before.

Animal Diseases.

28. With regard to the contagious diseases, the outstanding feature of the year has been the series of outbreaks of foot-and-mouth disease which began at the end of January. At the 4th November a total of 1,133 outbreaks had been confirmed and 55,229 animals had been slaughtered as diseased or exposed to infection. In other respects the incidence of the contagious diseases has not been unsatisfactory. Only one case of rabies and four cases of glanders have been recorded since the beginning of the year, and there has been a great decline in the prevalence of parasitic mange in horses. The outbreaks of anthrax, sheep scab and swine fever have occurred with nearly the same frequency as in the preceding year.

Foot-and-Mouth Disease.

29. The Council, at their February meeting, reaffirmed their approval of the policy of slaughter hitherto adopted by the Ministry of Agriculture in connection with outbreaks of foot-and-mouth disease, and expressed the hope that the Ministry would adhere to that policy.

30. Early this year the Minister of Agriculture appointed a Departmental Committee "To inquire into the origin and circumstances of the recent outbreak of foot-and-mouth disease, and into the policy and procedure which was pursued in dealing with the disease, and to report whether any alteration of the methods of administrative control hitherto adopted or any amendment of the existing law is necessary or desirable." Mr. Alfred Mansell was invited, and agreed to serve, as a representative of the Society on this Departmental Committee.

Sheep Scab.

31. In view of the unsatisfactory state of affairs concerning the prevalence of sheep scab, the Council, in conjunction with the National Sheep Breeders' Association, appointed a Deputation to wait upon the Minister of Agriculture on the question. Sir Arthur Griffith-Boscawen received the Deputation on May 29, and the following is the substance of a letter subsequently received from the Ministry :—

"A great deal of energy has been expended on plans and organisation designed to secure the eradication of sheep scab, and in 1920 an amended plan was introduced, which has not been sufficiently long in operation to enable the Ministry to see whether the object aimed at will ultimately be achieved by the working of the measures. There is little doubt that the measures now adopted will go far to achieve success, but it seems clear that a final satisfactory result would not be attained for some considerable time. On the other hand, if agriculturists are determined, as appears to be the case, that the eradication of sheep scab should be expedited—and there is, in the opinion of the Ministry, a good deal to be said for this—the Ministry considers that agricultural opinion should be prepared to agree to the imposition of such conditions as the Ministry considers it necessary to impose.

"The measures already taken for the eradication of scab have failed so far to accomplish their object owing to faulty application, and it is at least doubtful to the Ministry whether more efficient application of the principles of the scheme will be obtained without enlisting the help of sheep-owners by increasing their personal responsibilities.

"The class of disease to which sheep scab belongs is essentially one which must have the close co-operation of owners if its eradication is to be secured. The Ministry's methods which have hitherto been employed have not been successful, mainly on account of the insufficient power of compelling owners to act in this matter, and also because such powers as the Ministry has been able to use have not been supported by magistrates before whom delinquents have been brought. Further, no country which has not put a heavy responsibility on to sheep-owners has succeeded in eradicating scab from its jurisdiction.

"With these points in mind the Minister suggested to the deputation received by him this morning the following tentative proposals, in order that they might be considered and discussed with the Societies represented at the deputation :—

> The proposals briefly are that the Ministry should circulate to the widest possible extent its pamphlets dealing with the best methods of curing and eradicating scab, and that an Order should be made and published at a definite date, the effect of which would be to prescribe that any stock-owner having sheep scab in his sheep or selling to any other person sheep infected with scab should, after, say, two years from the publication of the Order, be liable to a heavy penalty—for instance, say 3*s.* a sheep, with a minimum fine of £10—unless he was able to show that he habitually took proper measures to cure and prevent the disease in his animals. The effect of such proposals would be that whilst the Ministry's existing Orders and activities will continue in operation, the burden of curing and preventing sheep scab would be placed directly on the sheep-owner concerned."

The proposals referred to were, on the recommendation of the Veterinary Committee, endorsed by the Council.

Importation of Store Cattle.

32. Since the last Annual Meeting the Council have continued to protest against the repeal of the Diseases of Animals Act 1896, which would have the effect of allowing the admission of Store Cattle into this country from abroad, and on May 2 the Council joined with other bodies in sending a Deputation to the Government. On July 24 a debate on the question of the exclusion of Canadian Store Cattle took place in the House of Commons, when a motion was carried, by 247 votes to 171, "That this House is of opinion that the time has arrived when the Embargo on the importation of Canadian Cattle should be removed."

The Council have since authorised their representatives on the Live Stock Defence Committee to support the Minister of Agriculture in taking steps to safeguard the health of the live stock of this country under the new circumstances which have arisen.

Exportation of Horses Bill.

33. The Council, on the recommendation of the Veterinary Committee, decided to support the Ministry of Agriculture in their opposition to the Exportation of Horses Bill introduced in the House of Lords by Lord Lambourne.

Research Committee.

34. In March last the Council set aside a sum of £2,000 as a Research Fund, and a Committee was constituted, under the Chairmanship of the Duke of Devonshire, to recommend to the Council in what manner this money should be expended, and to administer the Fund.

In the opinion of the Research Committee, a problem calling for early investigation was the profitable utilisation of whey, of which, it is estimated, there are wasted annually in this country some forty million gallons, a volume which contains a million pounds' worth of lact-albumen and lactose, or milk sugar. Lactose is much used for infants' foods and in other ways, but is all imported. The published accounts of the foreign methods of manufacture seem incomplete, and the factories are not shown to strangers. To start the industry in this country, therefore, experiments were necessary, and the Committee decided to undertake them in conjunction with Mr. Dampier Whetham and the Ministry of Agriculture, who were already experimenting on the subject. An offer, generously made by Mr. Whetham, to place his factory at Hilfield, Dorset, at the Society's disposal and to carry out the experimental work was accepted by the Council. A satisfactory method of extracting lactose was worked out in the laboratory by Mr. Harding, the chemist appointed by the Society, and he has since tested it with success on the large scale at the Hilfield factory. A method has been worked out for separating the lact-albumen in the form of a soluble albumen compound. Experiments were also made on a soluble form of dried whey, which might be made in cheese factories and used as a raw material in the manufacture of milk sugar. But it was eventually decided that a better solution of the transport problem was to be found in whey concentrated *in vacuo* to about one-tenth of its original volume.

Other investigations dealing with the profitable utilisation of whey are being conducted by Captain Golding, of the National Institute for Research in Dairying.

Arrangements have been entered into with the Norfolk Agricultural Station at St. Faiths, near Norwich, for the carrying out of experiments with cereals, more especially with malting barleys.

It is also proposed that the results of the past experimental work of the Society should be collated, abstracted and published.

A number of suggestions of problems of practical importance, and offers of land, buildings and stock have been made by Governors and Members, which will be considered by the Research Committee when they are in a position to take advantage of them.

Medal for Agricultural Research.

35. The Council, at the suggestion of the Research Committee, decided to revive this year the offer annually of the Society's Gold Medal for a monograph or essay giving evidence of original research on any agricultural subject or any of the cognate agricultural sciences.

Medals for Cattle Pathology.

36. In the competitive examination conducted at the Royal Veterinary College for the Society's Medals for proficiency in Cattle Pathology, the silver medal was gained by Mr. E. G. Langford, of Speenhamland, Newbury, Berks., and the bronze medal by Mr. T. Knowles, of 6 South Brink, Wisbech.

Queen Victoria Gifts.

37. The Trustees of the Queen Victoria Gifts Fund have contributed the sum of £140 to the Royal Agricultural Benevolent Institution for the year 1922.

National Diploma in Agriculture.

38. At the Twenty-third Annual Examination held at the University of Leeds from March 28 to April 7, seventy-seven candidates were successful in gaining the National Diploma in Agriculture. See list on pp. 222 and 223.

National Diploma in Dairying.

39. The Twenty-seventh Annual Examination for the National Diploma in Dairying was held at the University College and British Dairy Institute, Reading, for English students, from September 8 to 16, and at the Dairy School for Scotland, Kilmarnock, for Scottish candidates, from September 22 to 29. Fifty-eight candidates were examined at the English Centre, of whom 41 satisfied the Examiners, five reaching the Honours standard. Forty-one candidates presented themselves at the Scottish Centre, of whom twenty-nine passed, including four with honours. See lists on pp. 227–229.

Milk Publicity.

40. Mr. Richardson Carr and Mr. John Evens have been appointed as representatives of the Society on the National Milk Publicity Council.

Agricultural Relief of Allies.

41. The work of the Agricultural Relief of Allies Fund, which was inaugurated by the Royal Agricultural Society, has now come to an end. The task of the Committee has been prolonged owing to the difficulty in securing shipping for the gift to Roumania and to the fact that a sum of £18,000 was handed to the Committee for distribution in France from the surplus

of the British Ambulance Committee. Outbreaks of foot-and-mouth disease have also interfered with the completion of the Committee's programme.

Early in the year the gift to Roumania was successfully shipped to Constantza and transported to Bucarest. It consisted of 30 pedigree bulls, 58 heifers, 14 calves, 21 boars, 64 gilts, and 510 head of poultry. After a voyage lasting five weeks the consignment was handed over to the representatives of the Roumanian Government, and was distributed among the farmers in the devastated districts. The King and Queen of Roumania attended a show of the animals which was held at Bucarest before the stock was distributed, and their Majesties expressed their deep sense of gratitude to English farmers for help in so practical a form.

The £18,000 received from the British Ambulance Committee has been distributed in France in the form of live stock in the Departments of the Aisne, the Pas de Calais, and the Marne. To the date of this report 22 bulls, 200 heifers, 15 boars, 75 gilts, 10 rams, 302 ewes, and 1260 head of poultry had been handed over to the Directeurs des Services Agricoles in the Departments mentioned and had been received with much gratitude. The Committee are now occupied with the details of the final consignment to France.

A further gift of 2 bulls and 20 cows, representing accumulation of interest, etc., has been made during the year to Belgium. There is abundant evidence in Belgium that the work of the Committee has been productive of excellent results. During September a show of cattle given by the Committee, together with their progeny, was held at Ypres and was attended by the Governor of Western Flanders, who spoke in terms of the deepest gratitude of the assistance of the Committee. The members of the Committee who attended the show saw that the stock was greatly appreciated and well looked after.

The total amount of the Fund has reached £266,525 4*s*. 9*d*.

Loyal Address.

42. Their Majesties The King and Queen were pleased to receive very graciously the loyal and dutiful address of the Governors and Members of the Society passed at the Annual General Meeting in December last, on the occasion of the betrothal of H.R.H. The Princess Mary.

By Order of the Council,
T. B. TURNER,
Secretary.

16 BEDFORD SQUARE,
LONDON, W.C.1.
November, 1922.

NATIONAL AGRICULTURAL EXAMINATION BOARD.

I. REPORT ON THE RESULTS OF THE TWENTY-THIRD EXAMINATION FOR THE NATIONAL DIPLOMA IN AGRICULTURE,

Held at Leeds, March 28 to April 7, 1922.

1. The Twenty-third Examination for the National Diploma in Agriculture was, by the courtesy of the authorities, held at the University of Leeds, from the 28th March to the 7th April last.

2. The subjects of Examination were Practical Agriculture (two papers), Farm Machinery and Implements, Land Surveying and Farm Buildings, Agricultural Chemistry, Agricultural Botany, Agricultural Book-keeping, Agricultural Zoology, and Veterinary Science. Under the Regulations, the whole nine papers could be taken at one time, or a group of any three, four or five in one year and the remaining group in the year following. Candidates taking the whole Examination in one year who failed in not more than three subjects, and candidates taking a second group who failed in not more than two subjects, were allowed to appear again for those subjects only next year. Candidates failing in one or two subjects of a first group of not less than four, or in a single subject of a group of three, were permitted to take those subjects again in conjunction with the second group.

3. Two hundred and fifty-two candidates presented themselves, as compared with 186 last year. Thirty-five candidates took the whole Examination, 86 who had previously passed in certain subjects appeared for the remaining portion, and the other 131 candidates came up for a first group of subjects.

4. As the result of the Examination, the following 77 candidates were successful in obtaining the Diploma, one *with Honours*. The names of the Diploma-winners are in alphabetical order :—

Diploma with Honours.

Robert Laird, Glasgow University and West of Scotland Agricultural College.

Diploma.

Joseph Lorraine Allan, West of Scotland Agricultural College, Glasgow.
Carroll King Baker, "Gaspereau," Acton, W.3.
Vernon Leslie Barrow, Harris Institute, Preston.
Charles Henry Blagburn, University College, Reading.
George Vincent Brown, Harris Institute, Preston.
Robert Bryan, West of Scotland Agricultural College, Glasgow.
Edward Capstick, Armstrong College, Newcastle-on-Tyne.
Cowper Henderson Chalmers, Harris Institute, Preston.
Perronelle Mary Chevallier, University College, Reading.
Thomas Murray Clement, West of Scotland Agricultural College, Glasgow.
James Farquhar Currie, West of Scotland Agricultural College, Glasgow.
Frank Darling, Midland Agricultural College, Sutton Bonington.
Trayko Dayitch, University College, Reading, and Harper Adams College.
William Henry Dixon, Leeds University.
Leslie Roy Doughty, Midland Agricultural College, Sutton Bonington.
Herbert Charles Ducker, S.E. Agricultural College, Wye, Kent.
Charles Kenneth Flintoff, Midland Agricultural College, Sutton Bonington.
Alan V. B. Foster, Midland Agricultural College, Sutton Bonington.
Thomas A. Fowler, West of Scotland Agricultural College, Glasgow.
Brian John Fricker, University College, Reading.
William Donald Gentleman, West of Scotland Agricultural College, Glasgow.
James Gibson, Midland Agricultural College, Sutton Bonington.
Samuel Moore Gilbert, S.E. Agricultural College, Wye.
Edgar Philip Goddard, S.E. Agricultural College, Wye.
Marjorie Elisabeth Godfrey, Harper Adams Agricultural College, Newport, Salop.
Robert Graham, Leeds University.
C. L. Ingham Haden, Harper Adams Agricultural College, Newport, Salop.
Pendennis John Hayes, S.E. Agricultural College, Wye.
John W. T. Holloway, West of Scotland Agricultural College, Glasgow.
Leonard E. Humphreys, Harris Institute, Preston.
Cyril William Hutchinson, Leeds University.
John Jackson, West of Scotland Agricultural College, Glasgow.
William Albert Jacques, Harris Institute, Preston.
John Williams Jones, University College, Aberystwyth.
William R. Kinsey, Harper Adams Agricultural College, Newport, Salop.
Sydney R. Kirk, West of Scotland Agricultural College, Glasgow.
Alexander Ritchie Lamb, Midland Agricultural College, Sutton Bonington.
Edward Lawrence, S.E. Agricultural College, Wye, Kent.
Stuart Leslie Lawton, Midland Agricultural College, Sutton Bonington.
Reginald Lloyd Lewis, Leeds University.
Joan K. B. Little, University College, Reading.

Leopold A. Liventhal, West of Scotland Agricultural College, Glasgow.
Thomas McCormick, West of Scotland Agricultural College, Glasgow.
Alexander McCrorie, West of Scotland Agricultural College, Glasgow.
William Douglas Macfarlane, West of Scotland Agricultural College, Glasgow.
John MacGillivray, West of Scotland Agricultural College, Glasgow.
James Menzies Macnair, West of Scotland Agricultural College, Glasgow.
James Naismith Main, West of Scotland Agricultural College, Glasgow.
Doris Melville-Jackson, S.E. Agricultural College, Wye.
Graham Munro, West of Scotland Agricultural College, Glasgow.
John Oldnall Page, Harper Adams Agricultural College, Newport, Salop.
Hugh Woodland Parsons, University College, Reading.
Compton Edwin Pearson, Harper Adams Agricultural College, Newport, Salop.
Arthur Norman Plaxton, Leeds University.
William Arnold Polglaze, Harper Adams Agricultural College, Newport, Salop.
Leslie Cullum Ripper, Harris Institute, Preston.
Adrian John Robb, West of Scotland Agricultural College, Glasgow.
James Allan Rodger, West of Scotland Agricultural College, Glasgow.
Malcolm Ross, West of Scotland Agricultural College, Glasgow.
Robert Millar Scott, West of Scotland Agricultural College, Glasgow.
William Neil Sinclair, West of Scotland Agricultural College, Glasgow.
John Dick Smart, Harper Adams Agricultural College, Newport, Salop.
Jacob Harold Smith, Armstrong College, Newcastle-on-Tyne.
Jack Solomon, Midland Agricultural College, Sutton Bonington.
Bernard Stevenson, Harper Adams Agricultural College, Newport, Salop.
William George Talbot, West of Scotland Agricultural College, Glasgow.
John Thompson, Harris Institute, Preston.
Joseph Kenyon Thompson, Leeds University.
Lawrence Arthur Thompson, Midland Agricultural College, Sutton Bonington.
Milisav Todorovitch, Harper Adams Agricultural College, Newport, Salop.
Walter Hubert Turnbull, Midland Agricultural College, Sutton Bonington.
John N. C. Weir, West of Scotland Agricultural College, Glasgow.
Joseph Edward Wells, Midland Agricultural College, Sutton Bonington.
Mary Scott Westbrook, University College, Reading.
L. N. Trant Williams, Harper Adams Agricultural College.
Stephen Young Wyllie, West of Scotland Agricultural College.

5. Thirteen of the candidates taking the whole Examination failed in not more than three subjects, and 16 of the candidates appearing for a second group of subjects failed in not more than two. In these cases, the candidates concerned will be permitted to take again next year the papers in which they failed; if then successful in passing they will be awarded the National Diploma.

6. Of the 131 candidates appearing for a first group of subjects, the 65 whose names are given below succeeded in passing and are therefore entitled to take the remaining subjects at next year's Examination. If they then satisfy the Examiners, they will be entitled to the diploma.

John Algie, Glasgow University and West of Scotland College.
Reginald Austen, Harper Adams Agricultural College.
Lincoln E. Austin, University College, Aberystwyth.
George S. Baker, S.E. Agricultural College.
George J. E. Bowl, Harper Adams Agricultural College.
Kenneth M. Campbell, West of Scotland Agricultural College.
William Edward Cole, University College, Reading.
Neel Corderoy, Seale Hayne Agricultural College, Newton Abbot, Devon.
Frank Coulter, Leeds University.
George Davidson, West of Scotland Agricultural College.
Matthew A. M. Dickie, Glasgow University and West of Scotland College.
John Duncan, Midland Agricultural College.
Douglas H. Findlay, Glasgow University and West of Scotland College.
Alexander B. Fisher, West of Scotland Agricultural College.
William F. Francis, University College, Aberystwyth.
Peter Gorrie, East of Scotland College of Agriculture, Edinburgh.
H. Barcham Green, Seale Hayne Agricultural College.
John J. M. Hannah, West of Scotland Agricultural College.
Frank R. Horne, Seale Hayne Agricultural College.
John B. Houston, West of Scotland Agricultural College.
John Hoyland, Leeds University.
Donald S. Hudson, Midland Agricultural College.
Thomas B. Johnson, Leeds University.
Harold I. Kingston, Harper Adams Agricultural College.
Joshua K. Knowles, Midland Agricultural College.
Alexander Lambie, West of Scotland Agricultural College.
John F. Lawton, Midland Agricultural College.
Harold Alfred Lepper, S.E. Agricultural College.
Vincent Liversage, Harper Adams Agricultural College.
James V. Lochrie, Glasgow University and West of Scotland Agricultural College.
William M'Cubbin, West of Scotland Agricultural College.
Ian S. Macdonald, West of Scotland Agricultural College.
John McGregor, Glasgow University and West of Scotland College.
Kenneth Mackenzie, West of Scotland Agricultural College.
Leslie D. C. McLees, Glasgow University and West of Scotland Agricultural College.
David O. Marshall, Glasgow University and West of Scotland Agricultural College.
William A. Martyn, Harper Adams Agricultural College.
George W. Masheter, Harris Institute, Preston.
Alexander Matheson, Glasgow University and West of Scotland Agricultural College.
Philip D. Morcom, Seale Hayne Agricultural College.
Johnstoun N. Morgan, Harper Adams Agricultural College.
Alexander D. Murray, Seale Hayne Agricultural College.
Alexander F. R. Nisbet, Glasgow University and West of Scotland College.

Arthur Noble, Seale Hayne Agricultural College.
Bernard Norcross, Leeds University.
Clifford D. Oxley, Seale Hayne Agricultural College.
Leonard J. Packham, Royal College of Science, Dublin.
Alan S. Parkes, Cambridge University.
Robert T. Paterson, Glasgow University and West of Scotland Agricultural College.
Alexander Paton, Glasgow University and West of Scotland Agricultural College.
Secretan Rhys-Williams, Midland Agricultural College.
John C. Riddell, West of Scotland Agricultural College.
Eric Scatchard, Leeds University.
David E. Simpson, East of Scotland College of Agriculture.
Ernest B. Stevenson, Midland Agricultural College.
Frank E. Thornhill, Midland Agricultural College.
Thomas W. Todd, West of Scotland Agricultural College.
Henry J. Tyreman, Seale Hayne Agricultural College.
John P. Walters, Seale Hayne Agricultural College.
Ernest A. G. Wiggins, Midland Agricultural College.
George W. Wilkinson, Midland Agricultural College.
William J. Will, Glasgow University and West of Scotland Agricultural College.
John W. Woodcock, Leeds University.
Charles Wormald, Leeds University.
Archibald D. Wyllie, West of Scotland Agricultural College.

7. Forty-seven of the unsuccessful candidates who sat for a first group of subjects failed in one or two subjects, which they will be permitted to take again next year in conjunction with the second group.

8. The Reports of the Examiners in the different subjects are appended:—

Practical Agriculture. (First Paper, 300 Marks. Second Paper, 300 Marks.) Prof. Wm. Somerville, M.A., D.Sc., J. G. Stewart, M.A., B.Sc., and J. A. Symon, M.A., B.Sc.

The number of candidates who presented themselves for examination in Practical Agriculture showed a decided increase as compared with the previous year. Few of the students were of outstanding merit. Most of them seemed to have confined their reading to classroom notes and many had not availed themselves of the educational facilities afforded by their own college farms. The majority of the candidates appeared to be unacquainted with the latest applications of science to practice. Little was known, for instance, about plant breeding or recent investigation work regarding potatoes.

It was distinctly gratifying to find that most of the candidates who had not been brought up on farms had done their best to acquire a practical knowledge of agriculture by residence on farms over considerable periods. Some, indeed, by engaging themselves as wage-earners on farms in different parts of the country, had acquired a comprehensive knowledge of the subject. On the other hand, a number of students who had spent a year or more on the farm knew very little about the practical side of agriculture.

Farm Machinery and Implements. (200 Marks.) Prof. R. Stanfield, M.Inst.C.E.

The written answers on this subject were, on the whole, highly satisfactory, indicating that the candidates are now giving special attention to this important section of agricultural work, and the oral examination proved that the knowledge had been acquired by actual practical working experience.

The question on ploughing was attempted by nearly all the candidates, whose answers, in both examinations, were highly practical and to the point.

It is also evident that most of the candidates have had actual working experience with agricultural tractors, and many of them appear to have given intelligent consideration to the results of recent trials and demonstrations.

At the same time, it is necessary to report that many of the candidates are not receiving sufficient *practical* instruction in the *actual* working of farm engines and implements, and the attention of those in charge of training institutions is drawn to this omission. A sound knowledge of the working of agricultural machinery is now of the utmost importance, and it is desirable that the candidates should be given an opportunity of obtaining this knowledge in a thoroughly practical manner as part of their college training. In this connection it was obvious that the instruction given had been altogether too theoretical and without actual practical demonstration.

LAND SURVEYING AND FARM BUILDINGS. (100 Marks.) Edward Walford, F.S.I.

There was an all-round improvement in the papers this year, and the Ordnance Survey Maps were better understood, though it was clear that several candidates had not had occasion to use them in practice. It is noticeable that these subjects are worked up chiefly from books and lectures and candidates have had but little experience of the practical side of farm building construction, which is perhaps only to be expected. Many of the candidates did not know how to use a simple scale.

AGRICULTURAL CHEMISTRY. (300 Marks.) E. J. Russell, D.Sc., F.R.S., and J. F. Tocher, D.Sc.

A number of the candidates showed an intelligent appreciation of the fundamental principles of agricultural chemistry and had gained knowledge that could not fail to be useful to them in their future careers, whether on the farm, or in teaching and advisory posts. Others, however, were very weak in the elementary parts of the subject; indeed all of the candidates who failed were unsatisfactory in this respect. We must again emphasize the fact that many candidates come to this examination insufficiently grounded in elementary work and without knowledge of such important matters as the meaning of a superphosphate guarantee or the method of comparing quotations for interchangeable materials like lime and limestone, or muriate and sulphate of potash; yet some of these same candidates were prepared to talk about the most advanced parts of the subject, which, however, they had clearly not apprehended.

AGRICULTURAL BOTANY. (300 Marks). R. Stewart MacDougall, M.A., D.Sc.

The general average in the subject of Agricultural Botany was satisfactory. The practical question in the paper was well done by the majority of the candidates.

In the oral examination the candidates showed a good working knowledge of the various grasses and seeds of useful and weed plants. In the identification of grasses some of the candidates were rather hesitating owing to the fact that dried mounted specimens were used. One must use such specimens in early April; besides, the identification of the various grasses and other plants found in hay is of practical importance. One or two of the answer-books showed distinct carelessness in the method of presentation not justified by the length of the examination paper.

AGRICULTURAL BOOK-KEEPING. (200 Marks). C. S. Orwin, M.A.

The work of the candidates marked a distinct improvement on that done when I examined in this subject a few years ago. The principal question which involved the writing up in proper form of one year's financial transactions on a farm and the preparation of a profit and loss account and balance sheet showed that the majority of the candidates have a sound knowledge of financial accountancy up to the standard required for book-keeping on the farm. The other questions, dealing mainly with the principles of valuation and other matters incidental to Farm Accountancy, were answered by many candidates in a way which showed that the teaching now given to students is less mechanical than previous experience led one to conclude, and that both teachers and students are taking a wider interest in the form of book-keeping required on the farm and in the special problems which present themselves to the farm accountant.

Many of the candidates lost marks by reason of untidy work, and although, of course, accuracy is of the first importance, the fact should not be overlooked that clean and tidy entries are of considerable value. The interest and knowledge displayed in the answers to questions which involved some familiarity with the principles of costing marked a distinct advance on previous work, and was very satisfactory in view of the importance of the subject at the present time.

AGRICULTURAL ZOOLOGY. (200 Marks.) John Rennie, D.Sc.

While the general standard attained in the written examination was in most cases good and the number of comparatively poor papers was relatively small, the results in the *viva voce* examinations were less satisfactory. The cases in which candidates could not recognise insect types which were figured in their own laboratory books were too numerous. It is recommended that candidates should come prepared not only to recognise the more important farm and garden pests, but be familiar with their life histories, the seasons at which the various stages occur, and the general natural conditions affecting their prevalence.

VETERINARY SCIENCE. (200 Marks.) Prof. Sir John McFadyean, M.B., B.Sc., C.M.

Although only a small proportion failed to obtain pass marks the average standard of the candidates was below that of previous years. In many papers there was evidence of very defective general education.

9. The thanks of the Board are again due to the authorities of the University of Leeds, for their liberality and courtesy in placing the Great Hall and other rooms of the University at the Board's disposal for the Examination; and to the Examiners, for the care and attention they bestowed upon the written answers to the papers set, and upon the *viva voce* examination.

DAVID FERRIE, *Chairman.*

16 Bedford Square, London, W.C.1.
May, 1922.

II.—REPORT ON THE RESULTS OF THE TWENTY-SEVENTH EXAMINATION FOR THE NATIONAL DIPLOMA IN DAIRYING, 1922.

1. The Twenty-seventh Annual Examination for the National Diploma in the Science and Practice of Dairying was held for English candidates at the University College and British Dairy Institute, Reading, from September 8 to 16; and for Scottish candidates at the Dairy School for Scotland, Kilmarnock, from September 22–30.

2. Fifty-eight candidates presented themselves at the English Centre. Of these, fifty-six appeared for the first time, while the other two, having failed last year in the theoretical portion of the Examination, were permitted to take that portion again on the present occasion. Five candidates attained the "Honours" standard and thirty-six others were awarded the Diploma:—

ENGLISH CENTRE.

Diploma with Honours.

1. LESLIE JOHN WALKER, British Dairy Institute, Reading.
2. LEONARD JOHN MEANWELL, British Dairy Institute.
3. ANNE HALL, British Dairy Institute.
4. EVELINE MARY GRUNDY, British Dairy Institute.
5. DORA MARGARET PEACOCK, Midland Agricultural and Dairy College, Kingston, Derby.

Diploma.

MARGARET BRITTAIN, Lancs. C.C. Dairy School, Hutton, Preston.
EDITH M. BURROWS, British Dairy Institute.
MARY M. L. CASTLE, Midland Agricultural and Dairy College.
VALERIE ESSEX CHEKE, Midland Agricultural and Dairy College.
ELIZABETH MARY CHOLMELEY, British Dairy Institute.
CONSTANCE ESTHER COHEN, British Dairy Institute.
WINIFRED BLANCHE COOK, British Dairy Institute.

Freda Mary Crawter, East Anglian Institute of Agriculture, Chelmsford.
Margaret Willson Crinan, Lancs. C.C. Dairy School.
Frank Darling, Midland Agricultural and Dairy College.
Dorothy Dewdney, British Dairy Institute.
Mary Edwards, British Dairy Institute.
Marie Magdeleine Farrat, British Dairy Institute.
Alberta Mary Foxlee, East Anglian Institute of Agriculture.
Mary Eleanor Franklin, British Dairy Institute.
Ida Kathleen Gleave, Midland Agricultural and Dairy College.
Margaret E. A. W. Gurner, British Dairy Institute.
Phyllis Mary Hickson, British Dairy Institute.
Clemency Joan Jackson, Midland Agricultural and Dairy College.
Ruth Johnston, British Dairy Institute.
Emily Lambert, Lancs. C.C. Dairy School.
Amy E. E. Law, East Anglian Institute of Agriculture.
Arthur Townsend Lutley, British Dairy Institute.
Kitty Maria Mann, East Anglian Institute of Agriculture.
Thomas Martlew, British Dairy Institute.
Alice Mason, Midland Agricultural and Dairy College.
Elizabeth Matthews, British Dairy Institute.
John Thomas Pearson, British Dairy Institute.
Esmé V. A. Pettyfer, British Dairy Institute.
Elsie Lilian Pollard, Lancs. C.C. Dairy School.
Secretan Rhys-Williams, Midland Agricultural and Dairy College.
Monica Slingsby, British Dairy Institute.
Janet Mary Spencer, Midland Agricultural and Dairy College.
Ursula Starling, British Dairy Institute.
John Dingle Williams, British Dairy Institute.
Margaret Winter, British Dairy Institute.

3. At the Scottish Centre there were forty-one candidates in all. Thirty-nine of these took the whole examination, and two, who had previously passed in practical cheese and butter making, were allowed to sit again this year for the Paper work and *vivâ voce* only. Twenty-nine candidates succeeded in satisfying the Examiners, four of them gaining the Diploma with Honours :—

Scottish Centre.

Diploma with Honours.

1. **Frank R. Horne**, 47 Rolle Street, Exmouth, Devon.
2. **William D. McFarlane**, 23 Kelvinside Gardens, Glasgow.
3. **Malcolm Ross**, 55 Smith Street, Govanhill, Glasgow.
4. **William D. D. Jardine**, Loretto, Endbutt Lane, Gt. Crosby Liverpool.

Diploma.

George M. Anderson, Craigland, Dalbeattie.
Isabella Bain, Milltimber Farm, Milltimber, Aberdeen.
Margaret Brown, The Flush, Campbeltown.
Emma Isobel Coutts, The Manse, Logie Buchan, Ellon.
Ida Mechan Crawford, 67 Forest Road, Aberdeen.
Alastair A. M. Fisher, 35 Ladysmith Road, Edinburgh.
Jack Fisher, Seabank, Campbeltown.
Frances J. Glegg, Bonaly Tower, Colinton, Midlothian.
John Jackson, Berryknowe, Chryston, Glasgow.
Robert Laird, Lawthorn, Irvine.

Mary A. Leslie, Auchnacloich, Nairn.
James V. Lochrie, Maclean Cottage, Creebridge, Newton Stewart.
Joseph Lyons, Royal College of Science, Dublin.
Elizabeth T. McCallum, Duine, Ardfern, Argyll.
William McCubbin, Barnchalloch Croft, Lochans, Stranraer.
Harriet MacRae, Blackstand, Rosemarkie, Ross-shire.
James Naismith Main, Park Road, Hamilton.
Margaret D. Mitchell, Langlees, Biggar.
William C. Paterson, North Torfoot, Strathaven.
Adrian J. Robb, 19 Seyton Avenue, Langside, Glasgow.
David E. Simpson, Lyon Bridge, Fortingall, Aberfeldy.
John Strang, Duncanrigg Farm, East Kilbride.
Elizabeth M. Watson, South Monecht, Echt, Aberdeen.
Elizabeth Mary Westwater, U.F. Manse, Prestonpans.
Elizabeth T. Wilson, Bellevue, Eddleston, Peebles.

All the candidates at the Scottish Centre had been students at the Kilmarnock Dairy School.

4. The Examiners at both centres were :—William Burkitt, B.Sc., F.H.A.S., N.D.D. (General Dairying, Practical Butter-making and Capacity for Imparting Instruction) ; John Benson (Cheese-making) ; and Dr. J. Augustus Voelcker, M.A., F.I.C. (Chemistry and Bacteriology).

5. " It is satisfactory to note "—Mr. Burkitt reports—" that a much greater proportion of candidates obtained Honours marks than was the case in 1921. The standard all round was higher in General Dairying, though many candidates were weak in their knowledge of bovine anatomy and physiology, and several, whilst giving evidence of practical knowledge, could not explain the elementary principles underlying agricultural and dairying practices. Generally speaking, evidence of capacity to impart instruction to others was satisfactorily evinced, if anything the students at the English Centre being stronger in this respect. The Butter-making was good. There were fewer cases of over-churning than in the previous year, but anxiety to get a good texture resulted often in an excess of moisture. The time taken was generally less than in 1921. As usual, the arrangements were excellent, both from the point of view of the candidates and the Examiners."

6. Mr. Benson's report is as follows :—

" In practical Cheesemaking I have to report a distinct improvement at both centres, the work of almost all the candidates reaching a considerably higher average standard than in any previous examination at which I have officiated. Usually candidates are weak in the actual manufacture of blue-veined and soft cheeses, but this year there was a considerable general improvement.

" In the written and oral portions of the examination the results were not so satisfactory, and I do not consider that any of the candidates could be described as exceptionally good. Most of the candidates showed a satisfactory knowledge of cheese-making within the limits of the syllabus, but three questions which I set—bearing on the construction and use of machinery in large dairies and cheese factories, the necessary utensils and arrangement of work in cheesemaking dairies and factories, and the important subject of water supplies—were very indifferently answered.

"In my opinion, more attention should be given to dairy engineering and the general use of machinery, seeing that the co-operative plan of carrying on the manufacture of cheese in factories, where much machinery is necessary, has superseded to a great extent the home or private dairy practice. Both the written and oral examinations showed that in most cases students taking this paper had had hardly any opportunity of obtaining practical acquaintance with the working and construction of machinery and appliances commonly used in cheese factories.

"Generally, the candidates had a good knowledge of Dairying as practised in their own districts, but with a few exceptions they were indifferently informed as to the conditions and methods prevalent in other parts of the Kingdom and abroad.

"The arrangements made by the staff at both the English and Scottish Centres for carrying out the Examinations were as usual very satisfactory; the supply of milk available was ample and good; and, though candidates were more numerous than usual, everything worked smoothly and well."

7. "Considering the number of candidates at the English Centre, and the nature of the Chemistry and Bacteriology questions," Dr. Voelcker reports that "the results generally may be taken as satisfactory. The number of absolute failures was small, and several candidates sent in papers of more than usual excellence. These showed evidence of good training and special study. The weakness formerly shown in regard to questions bearing on General Chemistry was not so marked, though there is still considerable room for improvement. As regards individual questions set, that relating to 'food values' and 'feeding rations' was the one least satisfactorily answered, though the papers of the leading candidates showed that the questions set could be quite adequately dealt with. As a whole, the *vivâ voce* examination was good."

"At the Scottish Centre the results generally tend much in the direction indicated in Dr. Tocher's report of last year. The knowledge shown so far as it was confined to points of Dairying was good, sometimes very good; but the *vivâ voce* examination brought out a lack of real grasp of the chemical principles involved. The number of failures and of weak papers was larger than usual, and the oral examination was decidedly disappointing as compared with the corresponding examination at the English Centre, where care had evidently been taken to remedy the defects pointed out in previous reports. Several of the papers showed a high standard, and some of them special knowledge, but even the best candidates failed to maintain this excellence when met with ordinary questions relating to industries and the chemistry of everyday life."

DAVID FERRIE, *Chairman.*
T. B. TURNER, *Secretary.*

16 Bedford Square, London, W.C.
October, 1922.

ANNUAL REPORT FOR 1922 OF THE PRINCIPAL OF THE ROYAL VETERINARY COLLEGE.

ANTHRAX.

The following table shows the number of confirmed outbreaks of anthrax in each of the past eight years :—

Year.	Outbreaks.	Animals attacked.
1915	575	642
1916	571	687
1917	421	480
1918	245	282
1919	234	314
1920	459	547
1921	515	649
1922	515	592

For many years before the recent great war the view had been gaining ground that the main cause of anthrax among the domesticated animals in Great Britain was the consumption of imported foods contaminated with the spores of the disease, or of home-grown food from land to which bone manure containing the spores had been applied, and the incidence of the disease during the last six years may be said to have fully established that opinion. The striking decline in the number of outbreaks which began in 1917 and touched its lowest point in 1919, and the corresponding increase during the next two years, find a completely satisfactory explanation in the restricted amount of feeding stuffs and manures imported during the period, and cannot reasonably be attributed to any other cause. The disease may now be said to have reached its pre-war incidence, and no improvement is to be expected unless more efficient measures for preventing the importation of infected materials can be enforced.

GLANDERS.

The following table shows the number of outbreaks and the number of horses attacked during the last seven years :—

Year.	Outbreaks.	Animals attacked.
1916	47	117
1917	24	62
1918	34	98
1919	25	61
1920	15	22
1921	11	42
1922	4	4

It is disappointing to find that the hope, which appeared to be justified by the figures for 1921, that glanders had completely disappeared from this country has not been realised with certainty. As will be seen from the above table, only four cases were detected during the past year, and, as the last of them occurred about the middle of October, the disease may not yet be extinct.

SHEEP SCAB.

The reported outbreaks of sheep-scab during the last eight years have been as follows :—

Year.	Outbreaks.
1915	257
1916	381
1917	543
1918	351
1919	438
1920	479
1921	757
1922	661

The figures for the past year are again unsatisfactory, since they show that the Sheep Scab Order of 1920 has failed to make any decided impression on the number of outbreaks, and hold out no hope of the ultimate eradication of the disease. On this point there is nothing to add to what was said in the previous Annual Reports. Continuous infection of flocks in Wales, Scotland, and the north of England, and failure of owners in these areas to report the existence of the disease, are almost entirely responsible for the non-success of the measures now in force. The experience of other countries indicates that if the disease is ever to be exterminated here the law must prescribe much more severe penalties for concealment than those at present allowed. (See report to the Annual General Meeting, page 216.)

SWINE FEVER.

The number of confirmed outbreaks of this disease in each of the last eight years was as follows :—

Year.	Outbreaks.
1915	3,994
1916	4,331
1917	2,104
1918	1,407
1919	2,305
1920	1,816
1921	1,286
1922	1,390

1916 was the first complete year after the abandonment of the stamping-out policy, under which diseased and suspected pigs were slaughtered with compensation. Under the new system, when an outbreak occurs, the use of serum to confer protection on the apparently healthy pigs is encouraged, and restrictions of movement to or from the infected premises are less drastic than they were under the old *régime.*

As the figures in the table show, the change in procedure was followed by a great decline in the number of confirmed outbreaks, and in that respect the past year is the best since 1905. How much the present system has saved the Government may be gathered from the fact that as recently as 1914 nearly 40,000 pigs were compulsorily slaughtered, whereas last year the corresponding figure was 529. Although in some cases the new system throws a greater loss on the owner, it appears to be more popular, probably because it is less vexatious in its working.

FOOT AND MOUTH DISEASE.

With regard to this disease the past year has been the most disastrous after 1886, when it was stamped out for the first time after its introduction in 1839. In 1884 949 outbreaks were reported, but since that date until the past year the highest numbers were 95 in 1892 and 93 in 1921. The number of outbreaks during the past year was 1139, and in connection with these 55,565 animals were slaughtered as diseased or exposed to infection.

The means by which the disease has been so frequently introduced into this country during the last thirty years, and especially during the last twelve, is still unknown, but that the virus comes from infected animals in France, Belgium, or Holland is hardly open to doubt. The unfortunate experience of last year was not due to more frequent introduction of the infection from these countries, but to concealment, or failure to report suspicion, of cases which must have occurred early in January, with consequent wide dissemination of the infection before the machinery necessary to stamp out the disease could be put into motion. That is sufficiently attested by the fact that, although the country was supposed to be free from the disease up to the end of the third week in January, during the next two weeks the outbreaks confirmed were respectively 32 and 268, and these outbreaks were distributed over no fewer than nineteen counties in England and five in Scotland. For such breaches of the law the penalties hitherto imposed have generally been ridiculously inadequate, having regard to the serious loss to the country as a whole which may result from wilful concealment of the existence of the disease or from failure to recognise its symptoms.

It is understood that £790,244 was paid for animals slaughtered in the effort to stamp out the disease during the past year, but there can be no question that the expenditure was amply justified, as no measures of less severity than those employed could have prevented the disease from spreading throughout the country with losses that would have run into millions of pounds.

PARASITIC MANGE IN HORSES.

The incidence of the disease during the last five years is shown in the following table.

Year.	Outbreaks.	Animals attacked.
1918	4,483	8,377
1919	5,016	9,861
1920	3,564	3,812
1921	2,055	3,108
1922	1,025	1,442

The figures for the past year are very satisfactory, as they show that the disease has now fallen even below the rate of prevalence which it had before the war, the outbreaks in 1913 having been 2,382, with 4,647 horses attacked.

RABIES.

The following table shows the number of confirmed cases of rabies since the disease was re-introduced into this country in 1918.

Year.	Cases.
1918	98
1919	155
1920	41
1921	23
1922	1

The single case last year occurred in Hampshire in the third week of May. Owing to the exceptionally long period of incubation which the disease sometimes has, it is still too early to conclude that it has been absolutely eradicated.

OX WARBLE FLY.

All the important facts connected with the life history of the two warble flies are given in the leaflet by Mr. Cecil Warburton which was published by the Society in 1917.

The concluding sentence in that leaflet was: "The chief hope, however, of the eradication of this pest lies in the universal and thorough treatment of warbled cattle." At that time the only effective method of dealing with warbled cattle consisted in squeezing out the grubs from the skin; and, since any campaign against the fly must involve the frequent inspection of the skins of all cattle and individual attention to each warble discovered for about four months in several successive years, it was obviously desirable that some less troublesome method of destroying the parasites should be sought for. It would appear that the Warble Fly Committee appointed by the Ministry of Agriculture and Fisheries have discovered a method which is much less troublesome. It consists in the use of a wash prepared from tobacco powder and lime. The directions for preparing and using it are as follows:—

In a gallon of water is dissolved one pound of fresh lime. To this four pounds of the tobacco powder are added, and the mixture is then left standing for twenty-four hours. The liquid is then strained through coarse muslin or sacking, and applied to the backs of infected cattle with a cloth or brush. To obtain the maximum amount of liquid the cloth should be wrung out, and, if necessary, additional water may be introduced for a second wring out without weakening the resulting wash. The quantity mentioned is enough for the dressing of a dozen beasts, and it is important that the application be carried out so that the liquid penetrates through the breathing hole into the cavity of the warble and comes into contact with the maggot.

The dressing should be used at intervals of two or three weeks from the beginning of February until the end of June. It is only by persevering and general effort that the numbers of the insects can be reduced, and several years' work will be needed to approach extermination of the fly.

The tobacco powder used by the Committee in their experiments was that of Messrs. Corry & Co., Gainsford Street, Shad Thames, S.E.1.

In the leaflet issued by the Ministry (No. 155 T.A.) it is stated that during the spring of 1921, under the direction of the Irish Department of Agriculture, 940 cattle were dressed in Ireland with the above mixture, and that, of 4,885 warbles found in these animals, 3,990, or 80 per cent., of the maggots were destroyed.

The Warble Fly Committee are anxious that a large number of cattle owners should try this wash under ordinary farming conditions during the ensuing season and communicate the results to the Ministry. It is requested that comparison may be made of the effect of a single application of the wash with that of two applications at an interval of one or two days.

J. McFadyean.

Royal Veterinary College,
London, N.W.1.

ANNUAL REPORT FOR 1922 OF THE CONSULTING CHEMIST.

It may seem somewhat strange that, in a year of general depression for agriculture, such as 1922 was, the activity of the Chemical department should have been greater than usual. It may, however, be said that, while some may have been disposed to save in every possible direction, including that of fees for analyses, there are others who recognise that, in a time of hardship, economy is often exercised by looking well after what one purchases. Anyhow, applications both for analysis and advice have been more frequent, the number of samples sent for analysis increasing from 448 in 1921 to 546 in 1922. This latter, indeed, is the highest figure recorded since 1905.

In addition, 20 samples of Cider were analysed in connection with the Society's Country Show at Cambridge.

The increase in samples was especially noticeable in regard to soils, no less than 78 of these being sent as against 54 in 1921. In a considerable proportion of these the analytical results pointed to the need of liming. I am convinced that this is one of the most widespread needs of the soils of this country; a belief strengthened by my own experience at Woburn, where I have found liming to be indispensable, and where striking results have been shown both on land left unlimed and treated with Sulphate of Ammonia year after year, and on land similarly treated but with lime in addition.

The abandonment of the old practice of liming land, and the continuous use of forcing manures have resulted, I feel sure, in an impoverishment of the land in certain material particulars. Unfortunately, the high price of lime, consequent on the cost of labour and of fuel, has militated against the application of the only real remedy, and many, who in more favourable times would have limed their land, have felt themselves obliged to delay making the outlay.

There has been a slight increase in the number of feeding stuffs, but not in that of manures generally, with the exception of Basic Slag and Sulphate of Ammonia.

There has also been an increase in the number of waters submitted.

As regards the prices and supplies of feeding stuffs and fertilisers it may be said, generally, that these have been in favour of buyers. There has been a general lowering of prices of feeding stuffs, while those of fertilisers have gradually gone lower and lower.

Taking the principal feeding stuffs :—

Linseed Cake, starting in January at £14 per ton, rose to £16 10*s*. in March, then fell to £14 10*s*. in April, to £13 10*s*. in May, while from June to October £12 10*s*. was quoted, a subsequent rise to £13 10*s*. ruling to the close of the year.

Undecorticated Cotton Cake cost £9 5*s*. per ton in January, and gradually fell to £7 15*s*. in June, and has since stood very regularly at £7 10*s*.

Decorticated Cotton Cake has, throughout, cost £13 per ton or thereabouts, the Meal standing at the same figure.

Much the same applies to Ground Nut Cake, Coco-nut Cake and Palm Kernel Cake, the last-named being steady throughout the year at £7 per ton.

In Bran, Middlings and other Wheat Offals there has been a general fall from £8 and £8 10*s*. per ton at the beginning of the year to £6 15*s*. and £6 10*s*. towards the close.

There have been no new feeding materials introduced of any account, but Fish Meal for feeding purposes, more especially for pig-feeding, has been more extensively used.

Dried Yeast continues to have a certain sale, and reference is made later in my report to samples of Dried Milk which have been submitted, and which are used for feeding purposes.

The warning I gave last year as regards Linseed Cake appears to have borne some fruit, as, on the whole, these cakes have been found more satisfactory as regards purity. Special reference, however, is made in my report to cases that have occurred where Castor Oil Bean has been found to be present, alike in Linseed and in Compound Cakes.

Offals, generally, have also been found to be purer than before, and more free from weed seeds.

As regards fertilisers, the principal supplies have been those of Superphosphate, Basic Slag and the newly introduced ground Phosphate Rock—Nauru Phosphate.

The prices of Superphosphate have been gradually lowered, as, beginning with 80*s*. per ton for 30 per cent. soluble, and 90*s*. for 35 per cent. soluble, these prices have fallen to 65*s*. and 72*s*. 6*d*. respectively at the close of the year.

In consequence of changes in manufacturing processes there has been difficulty in getting the higher grades of Basic Slag, but the lower ones have been fairly well obtainable, and prices have fallen from 65*s*. per ton early in the year, for 20 per cent. phosphate, to 50*s*. and 42*s*. 6*d*. at the close of the year.

We are still without definite experimental proof of the usefulness of Slag Phosphate and ground Mineral Phosphates as compared with Superphosphate, Basic Slag, etc., and this still awaits solution. It should be pointed out, however, that sufficient attention is not given, in the case of ground Mineral Phosphate, to the matter of fineness of grinding, this being a very important consideration. The majority of samples of Nauru and other ground phosphates that have passed through my hands have been found to be insufficiently ground, and a guarantee similar to that required in the case of Basic Slag should be made compulsory.

Bones have remained steady in price at £8 15*s*. to £9 per ton, and Steamed Bone Flour at about £1 less.

Sulphate of Ammonia has stood throughout the year at £15 10*s*., to £16 per ton, but Nitrate of Soda, which commenced at £15 10*s*., dropped, towards the end of the year, to £13 5*s*. per ton.

Supplies of Potash salts have been good, owing, no doubt, largely to the competition which is going on between the German mines and the newly opened Alsatian ones. At one time there was talk of these interests combining, but so far this has not materialised, and has worked to the benefit of the farmer, who can now get Potash supplied very cheaply, Potash salts, containing 12 per cent. of Potash, being as low in price as 50*s*. per ton.

A question for experimental enquiry is whether the Muriate (Chloride) of Potash is as good a source of supply as the Sulphate, and experiments on this subject are now in progress.

I have already mentioned difficulties with regard to lime, and I might here refer to my own experience, when, for the purpose of continuing experiments on grass land at the Woburn Experimental Farm with different kinds of lime, I endeavoured, but in vain, to get some quantity of Lias Lime and of Oolite Lime. I made enquiries in several different directions, but the answer was in each case the same—that the works had " ceased producing " these limes for agricultural purposes.

I continue to find, as before, that ground lime is not, as a rule, to be depended upon, it often being ground from inferior qualities of lime, and I still hold to the opinion that, when lime has to be purchased, the best and most economical form in which to get it is that of burnt (or lump) lime.

Action by Government in regard to an amendment of the present Fertilisers and Feeding Stuffs Act, or the introduction of an entirely new Act, has not, as yet, been taken. The Royal Agricultural Society have, however, moved in this direction by calling together representative bodies for a Conference on the subject, and for urging on the Government the necessity of amending the present, or of introducing a new, Act. Several meetings of the Conference have already been held.

I proceed now, as usual, to comment on particular cases of interest which call for notice.

A. FEEDING STUFFS.

1. *Linseed Cake.*

These cakes have, as a whole, shown an improvement on those of 1921, when I commented on the growing tendency to produce Linseed Cakes not as free from weed seeds as was advisable and also quite feasible. That there is still need of paying attention to the nature and quality of Linseed Cake is shown by the fact that, of the sixteen samples sent to me, in one case Castor Oil Bean was found to be present, and that two others were impure by reason of excess of weed seeds.

In the first of these the cake was described as "Screw-pressed Linseed Cake." It was dark-coloured, and had a somewhat burnt taste, while further examination of it showed it to contain a small amount of Castor Oil Bean. This cake had been obtained from a Farmers' Supply Association in Northamptonshire. On the purchaser making his complaint, the vendors took the cake back and allowed full value for it.

Of the two cakes found to be impure, the first had excess of weed seeds and was returned to the vendors, they paying the carriage.

The analysis of the second cake was as follows:—

Moisture	11·48
Oil	8·04
Albuminoids	30·37
Carbohydrates Woody fibre, &c.	39·76
[1] Mineral matter	10·35
	100·00
Nitrogen	4·86
[1] including Sand	4·99

This cake was mouldy outside, and distinctly acid. It contained, as the analysis shows, a considerable excess of sand. It had been guaranteed to contain 9 per cent. of Oil and 30 per cent. of Albuminoids, and cost £15 5*s.* per ton. It was sold by a Farmers' Co-operative Society in South Wales.

2. *Cotton Cake.*

These cakes, with one exception, were all good, some of them being of more than usually high quality.

The exception is the following:—

Moisture	13·95
Oil	3·71
Albuminoids	21·93
Carbohydrates, &c.	28·29
Woody fibre	27·89
[1] Mineral matter	4·23
	100·00
Nitrogen	3·51
[1] including Sand	·16

The cake was low in Oil and very woolly, containing, also, excessive Fibre. The price, which at the time (February) was £12, was an extremely high one, good Bombay cake then selling at £8 a ton. This case occurred in Cheshire, and the purchaser sent the cake back to the vendor.

3. *Decorticated Cotton Cake and Meal.*

But few samples of these were sent. I have previously referred to a custom in the trade of giving a guarantee of Oil and Albuminoids together. This is contrary to the Fertilisers and Feeding Stuffs Act, and which obliges the Oil and Albuminoids to be separately stated. I would again call the attention of purchasers to the necessity of stipulating for the proper form of guarantee.

In two cases deficiency was found. In the first, which occurred in Gloucestershire, Decorticated Cotton Cake had been sold at £16 11*s.* 3*d.* per ton delivered, on a guarantee of its containing 59 per cent. of Oil and Albuminoids. It gave 7·64 per cent. of Oil and 43·37 per cent. of Albuminoids, thus showing a total deficiency of 8 per cent. It was a dark-coloured, badly-made and very hard cake. The purchaser was allowed a rebate of 8 per cent. on the original price.

The second instance occurred in Northamptonshire. The cake, bought from a Farmers' Supply Company as "Decorticated Cotton Cake" and on a guarantee of 50 per cent. of Oil and Albuminoids, was found to contain 9·32 per cent. of Oil and

32·93 per cent. of Albuminoids. The cake was only partially decorticated, and was little better than ordinary undecorticated cake. The purchaser obtained a rebate of 10 per cent. on the price.

4. *Compound Cakes and Meals.*

In the early part of the year a number of cases were brought to my notice where either injuries to, or actual loss of, stock had been experienced, presumably through the use of compound cakes and meals. In all of these cakes and meals I found Castor Oil Bean to be present.

These occurrences led to a great deal of correspondence, the outcome of which was to make it clear to me that, by some inadvertence or oversight, a cargo of feeding material that had come from abroad contained Castor Oil Bean, the presence of which had not been detected. This cargo had gone to mills, chiefly in the Liverpool district, and had thus found its way into compound cakes and meals.

When this discovery was made, energetic steps were taken by those who were responsible, and it is only due to them to say that, so far as I know, they handsomely compensated all those who had in any way suffered.

Since then I have had no subsequent cases brought to my notice, and it is clear to me that the troubles, recurrent as they are, arise from the presence of Castor Oil Bean in particular cargoes rather than from the Castor Oil Bean, as has been alleged, being a more or less necessary accompaniment of food materials obtained from India and other foreign lands. I regard it as a matter in which closer supervision should be exercised by importers and traders both at home and abroad, and this opinion is strengthened by the fact that these troubles occur only periodically, and then one hears no more of them for a considerable time.

I shall continue to consider the presence of Castor Oil Bean as a source of danger, and, because of the variability of its occurrence, I attach little weight to quantitative determinations of its presence, but regard it as a material to be rigidly excluded from all feeding stuffs.

In four cases members of the Society had occasion to refer to me compound cakes and meals which had done harm to their stock.

In the first of these a whole herd of dairy cows was badly affected, and the milk yield went to almost nothing, one valuable cow barely recovering. In the second instance three milking cows out of twenty were very badly affected, and the others more or less so. Violent purging was shown. In the third instance, the cattle that had had a cake sold as "Dairy Cake" scoured badly, and in the fourth the whole herd was seriously ill. In all these cases castor oil bean was present.

5. *Cereal Meals, Offals, etc.*

A considerable number of samples of these have been sent, and, as a whole, they have shown general improvement on the quality of last year's samples.

In one case, however, a sample sold as "Barley Meal" was found not to answer to this description at all, but, in addition to barley, to contain oats, peas, with bits of rice, earthnut and millet. It cost £11 15*s*. per ton delivered, good barley meal selling at the time for £11 2*s*. 6*d*. per ton. The purchaser, on complaining, obtained from the vendors (a firm at Gloucester) an allowance of 35*s*. per ton.

6. *Miscellaneous Feeding Materials.*

A. YEAST CAKE.

B. WAFER BISCUITS.

	A	B
Moisture	10·18	11·15
Oil	9·41	2·19
Albuminoids	40·87	13·06
Carbohydrates	32·55	72·07
Woody fibre, &c.		
[1] Mineral matter	6·99	1·53
	100·00	100·00
Nitrogen	6·54	2·09
[1] including Sand	·13	·19

A cost £14 per ton. B cost, at Manchester, 6*s*. a cwt., and was a distinctly good material, worth getting at the price, and useful where a starchy food is required.

7. *Dried Milk.*

A. DRIED SEPARATED MILK.

B. FULL-CREAM MILK POWDER.

	A	B
Water	8·26	6·40
Fat	·73	21·69
Albuminous matter (Casein, &c.)	30·18	26·12
Sugar, &c.	54·18	39·68
Mineral matter	6·65	6·11
	100·00	100·00

A was Dried Separated Milk, and the cost of this is now about £20 per ton.

B was sold as "Full-Cream Milk Powder" and cost £29 per ton.

B. FERTILISERS.

1. *Basic Slag.*

A large number of samples of Basic Slag were sent for analysis, and, as a rule, they came up to the guarantees given.

In one case a material sold as "Basic Slag" was reported on by me as being not a material that properly answered to that description, and also as being insufficiently finely ground. It gave :—

	Per cent.
Total Phosphates	33·91
Fineness	58·5

The material was obtained from a Farmers' Supply Association in Shropshire, and they had obtained it from works in South Wales. The nature of my report was, at first, stoutly contested, it being maintained that the material came direct from the furnaces. In the end, however, an admission was made that the Basic Slag had "a little rock phosphate added to enrich it." The purchaser obtained an allowance of £16 5*s.* on a purchase of 10 tons.

Two cases of deficiency of quality occurred. In one, 4 tons of Basic Slag had been purchased in Oxfordshire, in January, at £5 per ton, with a guarantee of its containing 30 per cent. of Phosphates. My analysis showed, however, only 18·2 per cent. of Phosphates, and the purchaser obtained a reduction of £2 a ton.

In the second case, 6 tons were purchased at 45*s.* per ton, delivered in Lincolnshire, there being a guarantee of 20 per cent. of Phosphates and 60 per cent. of Fineness. I found this sample to contain lumps of iron, there being no less than 21 per cent. of metallic iron capable of removal by sifting, and the analysis gave :—

	Per cent.
Total Phosphates	17·33
Fineness	41

An allowance of £3 on the 6 tons purchased was given.

2. *Flue Dust, etc.*

But little is heard now of this material as a fertiliser. Two samples, however, were sent me. One was from the neighbourhood of Sheffield and was stated to be Flue Dust from a colliery. It was found, on analysis, to contain ·41 per cent. of Potash, ·45 per cent. of Phosphates and ·54 per cent. of Nitrogen. It had a great deal of saline material with it, and was certainly not worth purchasing as a fertiliser.

Very different, however, was the following, which was a waste product from steel works—the residue from "case-hardening" steel. In this process burnt bones and also potash-containing materials are used. The analysis was as follows:—

Moisture	1·84
Carbon, &c.	·92
[1] Phosphoric Acid	32·38
Lime	42·79
Magnesia, [2] Alkalies, &c.	8·18
Insoluble Siliceous Matter	13·89
	100·00
[1] equal to tribasic Phosphate of Lime	70·75
[2] containing Potash	·41

This was obtainable at the low price of £2 per ton delivered, and, as such, it was very cheap, though, possibly, more useful to the maker of artificial manures than to the farmer.

3. *Soot.*

A material produced from the burning of cork, and sold as "Soot," gave the following analysis:—

Moisture	68·95
[1] Organic Matter	26·12
Mineral Matter	4·93
	100·00
[1] containing Nitrogen	·35
equal to Ammonia	·42

This, though costing £6 per ton delivered on the farm (Surrey), was a very inferior material and not worth getting at all as a manure. I was informed that it was collected in London, and was considered in the cork trade as a perquisite of the men; they sell it to the sweep, and in this way, no doubt, it finds its way into soot as sold to the agriculturist!

4. *Lime.*

The variable quality of this, and the need of paying attention to this point have often been urged in my reports. The following two cases are given in further illustration:—

	A	B
Oxide of Iron and Alumina	·10	·30
[1] Lime	95·97	54·72
Magnesia	·35	·21
Water, Carbonic Acid, &c.	2·29	43·28
Silica	1·29	1·49
	100·00	100·00
[1] equal to Carbonate of Lime		97·71

A was an excellent sample of lump lime. It came from a Buxton firm and was obtainable in the neighbourhood of Manchester at 41*s*. 8*d*. per ton delivered.

B. This was a sample of Carbonate of Lime, very well ground, but costing, as it did, 35*s*. 6*d*. per ton delivered (in Essex), it was comparatively dear.

5. *Waste Materials.*

A

Moisture	19·21
[1] Organic matter	18·66
Phosphate of Lime	1·18
Oxide of Iron, &c.	19·30
Insoluble Siliceous matter	41·65
	100·00
[1] containing Nitrogen	1·01
equal to Ammonia	1·23
Lime	4·71

B

Oxide of Iron and Alumina	·66
Lime	53·58
Magnesia	·81
Silica	1·66
Water, Carbonic Acid, &c.	43·29
	100·00

A was a waste material consisting largely of animal matter, and cost £4 a ton in the neighbourhood of York. It was not worth, manurially, above £1 a ton. The vendor made an allowance of £1 a ton on the purchase.

B was known as "Hodstuff," and was described as a "fertiliser and purifier." It was purchased at £7 per ton in the neighbourhood of Nottingham. It was really a waste lime product, for which £7 a ton was an absurd price. For liming purposes it might be worth 50*s*. a ton delivered. On receiving my report, the vendor removed the material at his own expense.

6. *Sludge Cake.*

	A	B
Moisture	31·60	28·22
[1] Organic Matter	22·40	30·79
Oxide of Iron and Alumina	2·63	10·07
Lime	19·43	2·89
[2] Phosphoric Acid	1·17	2·48
Alkalies, &c.	14·07	4·68
Insoluble Siliceous matter	8·70	20·87
	100·00	100·00
[1] containing Nitrogen	1·11	1·44
equal to Ammonia	1·35	1·75
[2] equal to Phosphate of Lime	2·56	5·42

	C
Moisture	5·14
[1] Organic Matter	16·64
Oxide of Iron and Alumina	2·89
Lime	38·02
Magnesia, Alkalies, &c.	26·49
Sand	10·82
	100·00
[1] containing Nitrogen	1·25
equal to Ammonia	1·52

A. This was obtainable in the neighbourhood of London. It cost, per ton, 4*s*. on rail, with carriage 5*s*., being used on market-gardening land in Essex. It was of quite fair nature, and worth getting at the price, if only for the mechanical advantages which such a material would impart to the land.

B. This came from the Birmingham district, and the cost, as delivered on land in Berkshire, came to 40*s*. a ton, this being inclusive of 13*s*. 5*d*. carriage. This material, again, is better than most of its kind, and might well take the place of farmyard manure.

C. This was dried Sludge from sewage works in Staffordshire, and was obtainable at the works at £1 a ton, it only having to be carted one mile to the farm. It was in dry condition, and contained a good deal of lime. It would be decidedly useful on land requiring that constituent.

The following is a list of the samples sent to me by Members during the twelve months, December 1, 1921, to November 30, 1922 :—

LIST OF SAMPLES. R.A.S.E.

1921–1922.

Linseed Cakes and Meals	16
Cotton Cakes and Meals	26
Compound Feeding Cakes and Meals	50
Palm-Nut Cakes	6
Soycot Cakes and Meals	2
Ground-Nut Cakes	8
Coco-nut Cakes	7
Cereals, Offals, &c.	57
Superphosphates	10
Compound Manures	18
Raw and Steamed Bones	15
Meat Meals	4
Fish Meals	10
Guanos	2
Basic Slags	54
Slag Phosphates	5
Ground Phosphates	5
Sulphate of Ammonia	20
Flue Dust, Soot	3
Potash Materials	5
Shoddy, Wool Waste, &c.	26
Refuse Manures	3
Sludges, &c.	5
Lime, Chalk, &c.	29
Milk, Butter, &c.	17
Dried Milks	4
Waters	42
Soils	78
Miscellaneous	19
Total	546

J. AUGUSTUS VOELCKER.

1, Tudor Street, E.C.4.

ANNUAL REPORT FOR 1922 OF THE BOTANIST

THE most notable characteristic of the Botanical Department's work during the post-war period has been the steady increase in the number of enquiries concerning the weeds of arable and grass land. In 1922 these numbered nearly 150, or, approximately one-third of the total enquiries received. Twenty-eight species, for the most part common weeds, were represented in these enquiries.

The problem of eradicating or even of keeping weeds from spreading wholesale without injury to the crops in which they occur is in many, if not most, cases an exceedingly difficult one and worthy of more attention than it receives at the various experimental stations in this country. At present a few can be kept under control by spraying, but in most cases changes in the ordinary routine of cultivation have to be introduced in order to provide opportunities for a direct attack upon them.

The commonest weed of arable land, if the frequency of its receipt in the laboratory is significant, is the common spurrey. Next in order of troublesomeness is the corn-buttercup or stave acre. This has become so abundant on some of the heavier soils that it is not uncommon over acres of ground to find one plant of it on every square inch. Two factors account for its prevalence—it sheds many of its seeds before the cereal crops in which it flourishes are ready for harvest, and a considerable percentage of these seeds remains dormant in the soil instead of germinating in the following spring. As a consequence, even after a well-worked fallow the soil may still be "infected" with this pest, and should a corn crop be taken after the fallow more or less ideal conditions are provided for its further increase. Beans, widely spaced for cleaning over as long a period as possible, or, if the soil is suitable, a root crop appear to offer the best chances for exterminating this weed, and also the black bent with which it is frequently associated.

The weeds of newly-sown grass land have provided several interesting problems in the current year. Theoretically, if proper precautions have been taken, few weeds should appear, but in practice the growth of excessive crops, chiefly of annuals, is not infrequent. Those reported on most frequently have been charlock, shepherd's purse, and groundsel. None of these occur as weeds of old-established grass land, and one may reasonably expect them to disappear completely as the grasses and clovers begin to become established.

One species sent in from Rutland was of more interest as it was stated to be unknown in the surrounding district. and consequently the suspicion arose that it had been introduced with the seeds mixture. This was the Dyer's mignonette (*Reseda luteola*), a widely-distributed weed of waste places throughout all but the northern parts of this country. A similar case has been under my observation for some time. Twelve years since a small grass field was broken up in the autumn to form a garden, and in the following spring this weed came up in extraordinary abundance. Again, it could not be found on the surrounding farms. Since then the garden has been highly cultivated, and it is known that none of the plants which still appear casually has seeded. Yet an abundant crop can always be produced by deeply trenching the land. The facts indicate that the seed of the Dyer's mignonette can remain dormant in the soil for at least twelve years. What the maximum period is for which they can retain their vitality remains to be proved. But it is probably over fifty years ago that the Dyer's weed was last grown as a crop on this land, for two local septuagenarians vouch for the fact that it has always been under grass as far as their memory goes.

WHEAT.

The samples of grain received for tests of germinating capacity again showed how prevalent bunt has become throughout the country. Attention has been called repeatedly to this fact in the annual reports of the Consulting Botanist, and now abundant confirmation has been provided by an examination of the wheat samples received at the Official Seed-Testing Station, which shows that no less than 41 per cent. of them are bunt-contaminated. Further comment on the necessity for dressing every lot of seed-wheat before drilling is not called for. This dressing is best done with formalin which is easily the most efficient fungicide for the purpose, and is moreover less liable to diminish the germinating capacity of the grain than any preparations of copper-sulphate (blue-stone).

With the exception of bunt, few of the better known diseases of wheat were sent to the laboratory for examination—in fact 1922, like the preceding year, was characterised by a crop of over-average healthiness. Yellow rust, the commonest pest, was so late in appearing that it caused little damage, and mildew, even in districts where it is normally abundant did not attack the crop with much severity.

Two cases of wheat being sold for seed under a wrong name were dealt with. Such cases are commoner than would appear from the small numbers mentioned in these reports. Where mal-descriptions of varieties are suspected and advice is needed, if possible, specimens of the ears should be sent as well as of the grain, for the appearance of the grain often varies considerably with the conditions under which it is grown, and this often makes identification a matter of difficulty or even uncertainty.

BARLEY.

In most parts of the country conditions for the growth of barley were unsatisfactory. During the late spring and early summer growth was checked by drought; then, as the crops came into ear, copious rains started the plants into vigorous growth, with the result that evenly matured grain samples were exceptional. Abnormal plants were unusually abundant in the crops all over the country, and many specimens with branching ears were sent to the laboratory, often with the question whether they were worth further propagation. Those tested here in previous years have failed to retain this habit, but forms of barley breeding true to this characteristic are known. They are not desirable types, however, for the smaller grains of the lateral branches spoil the evenness of a sample. A much rarer abnormality was sent in on two occasions and seen many times in the collections of barley grown at Cambridge. In this, portions of the rachis, up to an inch in length, were completely bare owing to the non-development of the florets, whilst the apex of the ear often became clubbed owing to the normally sterile lateral florets setting grain. This abnormality was only met with in Archer's stiff straw barley and some of its hybrid derivatives.

Fungoid diseases were not unduly prevalent, those most frequently reported on being the covered smut and "blindness" due to the presence of Helminthosporium.

Late in the season several enquiries were dealt with on the subject of autumn-sown barley, possibly on account of the good results shown during 1922 by Archer's stiff straw treated in this fashion. The characteristics of the little-grown Sprat barley, and again of some of the six-row forms, were also the subject of a few enquiries.

OATS.

The germination trials proved to be more satisfactory than was expected, and no sample examined showed a germinating capacity below 90 per cent. But, though the start was favourable, subsequent developments were far from being so. Troubles with the crop began early in the season, several reports reaching the laboratory of the failure of winter sowings in February. The spring-sown crop in turn was, in the drier districts, checked by drought, and this, coupled with an attack of frit-fly of more than ordinary intensity, resulted in yields well below the average.

This unfortunate state of affairs has led to numerous enquiries for better varieties. These have been difficult to reply to satisfactorily, for oats have not been tested at the various experimental stations in this country to the same extent as wheat or barley. At present there is a wide choice of varieties, with, however, comparatively little to choose between them. Two which have been more satisfactory than others during the last two unfavourable seasons are the Swedish oat Victory and the old Potato oat, whilst the Black Tartarian has, in some districts, cropped well where other sorts have been partial failures.

CLOVERS.

Various enquiries regarding the germination of clover samples have brought out the fact that it is not always advisable to insist on obtaining the highest possible germinating capacity when making purchases of red clover seed. If this course is adopted regardless of all other conditions, it generally leads to the purchase of Chilian clover, which, besides possessing a better appearance than most English-grown clover, frequently has a better germinating capacity. There is now, however, a considerable body of evidence to show that the Chilian strains are not the equal of the English in winter hardiness and cropping capacity. Consequently a difference of 5 or even 10 per cent. in the germinating capacity in favour of Chilian seed should not be allowed to weigh too heavily when coming to a decision as to the relative value of Chilian and English-grown seed.

The failure of the clover plant through the intense drought of 1921 led to many enquiries in the early spring, for some crop to be grown as a substitute. Many members were driven to risk making a hay crop from either a mixture of peas and oats or of tares and oats. The few reports received show that the experiment was unexpectedly successful, but it is one no one in the wetter parts of the country should attempt on a large scale, for the difficulties of curing the crop in broken weather are too insuperable.

The so-called "annual" sweet clover referred to in previous reports has been tried under the name of Hubam clover by several members. Their accounts of it are not particularly favourable and lead one to expect that it will share the fate of the ordinary Bokhara clover and disappear from cultivation in this country, except possibly under very special conditions.

ROOTS.

The mangel crop provided only two enquiries, both concerned with decay in the clamps as a result of over-late lifting and consequent frosting of the roots. With swedes the state of affairs was very different, and many enquiries were received with regard to mildew, club-root, and a rot due to a species of Pseudomonas, not identifiable further without the isolation of the causal organism. The formidable disease club-root, or finger and toe, appears to be coming more and more abundant, and the high cost of the heavy dressings of lime necessary to keep it in check will, it is to be feared, accelerate this unfortunate tendency.

Two further cases of swedes failing to bulb and producing rape-like stems and branches were reported. In each only a few plants occurred in otherwise normal crops. The problem of accounting for the presence of such plants has been under investigation for some time, but it is not yet solved. All that can be said at present is that the plants are not the product of accidentally included rape seeds, for, if allowed to flower under conditions which preclude the visits of insects and ensure self-pollination, they give rise to bulbous plants. But the extent of the bulbing is very variable and, so far, none of the specimens obtained has produced a typical swede bulb.

The outstanding characteristic of the potato enquiries has been the prevalence of " curl " in fields planted with home-saved seed. The complaint is incurable, but preventable by the use of Scotch or Irish-grown seed.

FRUIT.

Many of the commoner diseases of fruit were the subject of enquiry. The list of pests reported on was practically a counterpart of that of the previous year. Apple-mildew and apple-scab, both controllable by spraying, appear to be the diseases which give most trouble to those growing this fruit. As in former years recipes for the preparation of various fungicides and instructions on their use were sent to several of the Society's members.

R. H. BIFFEN.

School of Agriculture,
Cambridge.

ANNUAL REPORT FOR 1922 OF THE ZOOLOGIST.

INTRODUCTION.

APART from an unprecedented amount of frit-fly attack on oats the advisory work of the Zoological Department has been rather featureless, and no very lengthy report seems to be called for. Many different pests—especially caterpillars—were notified, but there is little of general interest to be said about them. The bee mite has been the subject of further research, but the results so far are very confusing, and there is much that still remains unexplained. Much attention has also been given to the warble-fly, and additional evidence obtained in confirmation of its life-history as re-stated in the Zoologist's Report for 1916.

CEREALS.

Corn pests have been very prevalent this year. No complaints have been received of important damage by Hessian-fly, but examination of wheatfields showed it to be present in greater quantity than usual, and the same may be said of corn saw-fly. There were several cases of fairly severe attacks by gout-fly on barley, and on one occasion wheat was attacked. Mr. Theobald made the interesting observation that in Kent the recognised gout-fly, *Chlorops tæniopus*, was not the species chiefly concerned, but that a smaller species, *C. limbata*, was generally responsible for the injury.

The outstanding corn pest of the year was, however, the frit-fly. The spring attack on oats was very severe, and already in June accounts began to come in of second-brood attacks on the ear of both spring and winter oats, and in one case on barley. The early attack on late-sown oats is an annual occurrence, but it is doubtful whether the subsequent broods of the fly were ever previously so injurious in this country as during the past season.

The spring attack is of course the most destructive as the whole crop may be ruined. In less severe cases the field presents bare patches and the plant comes up thinly, but there is often considerable recovery, as was very noticeable this year after the rain in June. The later broods affect not the life of the plant but the yield, for the eggs are laid in the ear. If this is young and still enveloped in the sheath, it may be totally destroyed and never emerge at all; if somewhat more advanced, some of the spikelets are "blind" and the grain in the others more or less weakened.

A short account of the life-history of this insect may be repeated here. The flies first appear in May, and lay their eggs on the young oat plants, generally just inside the sheath. The grubs bore into the " bulb " and feed on the growing shoot, and the first indication of their presence is the discoloration of the central leaf, which turns yellow and then orange or brown, and easily comes away when pulled. Having killed the shoot the grub turns to a chrysalis (or puparium) inside the plant, and gives rise to a fly of the second brood. Clearly this first attack, if severe, may be very destructive. Nevertheless there may be considerable recovery in a crop apparently badly infested, especially in rainy weather, for the injured plants tiller, and some of the tillers may escape attack. The second brood appears about five weeks after the first—usually in the latter part of June. The base of the plant is now safe from the fly, which requires soft and nutrient tissues for its grub, and therefore selects the developing ear for oviposition. After a further interval of about five weeks a third brood (or second summer brood) makes its appearance, usually in August. These flies oviposit in the spikelets of the now fully developed ears and their grubs feed on the grain. The harm done by this brood entirely depends on the degree of hardness of the grain attacked. If soft it is greatly injured, but if nearly ripe the young grub is unable to gnaw it and dies of starvation.

Whether or not there is a normal third summer brood is doubtful, and the matter is complicated by the fact that individuals of the same brood may emerge at considerable intervals, so that the broods more or less overlap. There were some indications of such a third summer brood this year.

Flies of the last brood lay their eggs on grasses, and the winter is always passed in the grub stage. Those which oviposit on rye-grass which is to be followed by winter wheat have been proved at Cambridge to be the usual source of infestation of the wheat crop, which for several years past has in many districts suffered from frit-fly attack. Living larvæ have been found in the ploughed-in stubble of the rye-grass, and from this they readily migrate to the newly germinated wheat.

The experience of the past season confirms the view that late-sown oats are most subject to the spring attack, and the only possible measures to be taken against it appear to be sowing as early as possible and thick seeding where the fly is annually destructive. Probably more could be done in the way of the destruction of the flies at harvest time. They are often to be seen in vast numbers about the stooks in the field, and when the oats are stacked the flies continue to emerge for days, and the lower part of the stack may sometimes be seen to be quite blackened by the hosts of flies which remain there for a few hours before dispersing to lay their eggs on grasses.

If the harvest is much delayed the flies may all have left the crop before it is threshed, but in normal years large numbers of the puparia may be observed in the tailings, and the flies from these ought to be prevented from escaping into the open.

I received fewer notices than usual of wheat bulb-fly attack, but there were a few cases of " tulip root " in oats, and in the spring wire-worm and leather-jacket were complained of in various corn crops.

ROOT AND GARDEN CROPS.

In the dry weather of early summer flea-beetles were destructive in many root crops. Gall-weevil in turnips and cabbages was abundant in many districts, as also were root-fly maggots. Millipedes, surface caterpillars, mangold-fly and carrot-fly gave rise to the normal number of complaints, and slugs seemed to be more destructive than usual.

Celery-fly was distinctly less prevalent than last year, and so was the cabbage white-fly, though it persisted through the winter and was found on the spring vegetables. This autumn, however, it has been almost absent in localities where it was excessively abundant a year ago. The hot-house white fly, on the other hand, was again very troublesome on tomatoes and other plants under glass, where, of course, weather influences are nearly excluded.

In most localities there was less trouble from cabbage caterpillars than usual, the Large White butterfly being comparatively scarce, though the Small White was fairly abundant.

Sitones weevils were at times destructive to peas, and there were not a few complaints of black aphis on beans, but these pests were not as prevalent as in many seasons.

FRUIT.

Almost all the recognised fruit pests have been notified from one quarter or another during the season, but the attacks were very scattered and not as a rule widespread, so that a list of them would possess little interest. An analysis of the facts shows that aphis was much less prevalent than last year and that various kinds of caterpillar were most frequently the subject of complaint. Trouble from certain weevils (*Phyllobius* and *Otiorrhynchus*) seems to be on the increase in some districts, and Capsid bugs have been reported from localities where they were previously absent or unrecognised.

Pear-midge would appear to be less prevalent than it was a few years ago, and not a single application has been received concerning Codling Moth, which is generally the subject of many enquiries. Red spider is essentially a dry-weather pest, and it was surprising to receive several complaints of its occurrence during the past season, but in most cases the trouble soon disappeared. In this connection it is perhaps worth noting that mites of the genus *Tetranychus* were several times found on plants such as gooseberry, currant and strawberry, where the *Bryobia* "red spiders" are more frequently met with.

FOREST PESTS.

Questions with regard to forest pests were not numerous, nor were the attacks which were reported very important unless the oak tortrix be so considered. Where this insect is only an occasional pest little harm is done, for completely defoliated oak trees have a remarkable capacity for renewing their leaves, but extensive annual visitations are more than the trees will stand, and their vitality is drained. In several cases this year it was stated that oak trees were in danger of succumbing to repeated attacks during the last few seasons. The only measure which would seem likely to be of use against the caterpillar is to spray the trees with an arsenic wash when the attack begins, and on the large scale this operation is too difficult and costly to be practicable, though it might be possible by this means to save the lives of a few ornamental trees in a park. No other treatment has proved at all successful, and though the pest has been familiar for ages, we are no nearer to any practical solution of the problem it presents.

It was formerly a common experience that a bad attack by this moth was followed by a year when it was almost entirely absent, the caterpillars being so extensively parasitised that the whole brood was practically exterminated, and several years might elapse before it was again numerous enough to be troublesome. Birds eat it readily, and it is preyed upon by several species of Ichneumon-fly. The tiny *Pteromalus deplanatus* which sometimes invades houses in incredible numbers and takes shelter in places which might be thought impossible of access —as, for instance, behind the glazing of pictures—is one of its parasites. The origin of these swarms was always a great puzzle, and though, as mentioned in our Report for 1919, the oak tortrix was suggested as its possible "host," the matter was not proved till last year. There are signs that the numerous parasites are becoming less efficient than formerly in the control of this pest, which in some districts has renewed its attacks annually for some years past.

Certainly in planting oaks the sessile variety should be selected, for, though not immune, it suffers much less than the pedunculate oak, and its timber is equally valuable. Gillanders attributed its comparative immunity to the earlier date at which it puts forth its leaves, which are strong enough to resist attack when the eggs of the moth begin to hatch.

Some complaints were received this year with regard to an attack on poplar trees by a pest by no means rare, but not generally considered important. This was the leaf-stalk aphis, *Pemphigus bursarius.* It causes a purse-like gall, often highly coloured, on the petioles of the poplar, the black Italian species being its favourite host. It is generally present to some extent, but during the past season cases were reported in which almost every leaf-stalk was attacked, and as the infested leaves fall prematurely, trees were entirely defoliated early in July. The insects are to be found alive in all stages in the galls on the prematurely fallen leaf-stalks, and it would seem a useful measure in cases of bad attack to sweep up and burn the leaves beneath infested poplar trees.

Growers of willow for bat-making are complaining very much of the harm done by the willow wood-midge, *Rhabdophaga saliciperda.* This minute insect does a most disproportionate amount of injury to willow stems and branches of more than two years' growth. The fly, which is only about the tenth of an inch in length, lays its microscopic eggs in rows on the bark about June, and the maggots which hatch out set up such an irritation at the spot that an abnormal growth of wood takes place, resulting in a local thickening or gall. The bark is stretched tightly over this, and at a later stage splits and comes away in strips. When the flies come out in the spring the appearance is most striking, for the distorted growth of the wood is revealed, and the area is all pitted with the cavities in which the maggots lived.

The trouble is that the galled area is not at all conspicuous until the flies come out and the attack is over, but a little practice enables one to detect the patches where the pest is at work at an early stage. Where the attack is slight in a plantation of young willows it is best to cut down the affected trees to the ground level and burn them, but where a large proportion of trees are attacked, painting the diseased patches with tar in the spring prevents the emergence of the flies in May and they are at least prevented from spreading the attack.

The only other true forest pests about which enquiries were received were wood-wasps (*Sirex gigas*), beech coccus, and poplar longicorns, though there were a few cases of injury to dead timber.

ANIMAL PARASITES.

Reference has often been made in these Reports to the new light that recent research has thrown upon the remarkable life-history of the warble-fly, and its story was retold in the Report for 1916 and circulated in pamphlet form. There is abundant evidence in newspaper references and even in the pages of agricultural journals that the results of the investigations of the last thirty years are either unknown to, or at all events unaccepted by, a large number of people interested in agriculture. Yet every year since 1916 has added to the certainty that in all essentials the mode of life of the insect is what it was then stated to be.

The original belief was that the eggs of the fly were laid in the skin of the back, where the warbles later appeared. The whole question had to be revised when it was definitely proved that the eggs are attached to hairs, chiefly on the legs, and never in the region where the warbles are subsequently found. Under the old belief it was never explained how it came about that no trace of warbles could be found in the hide before December, though most of the eggs were laid in July, and it is precisely this period in the life-history of the parasite as now known that has proved most difficult of acceptation by the farmer and stockbreeder.

To state the case once more very briefly, it is now ascertained beyond a doubt that the eggs are laid on the hairs of the legs or flanks, and that the grubs on hatching out burrow in at the base of the hairs and spend the next few months wandering about in the interior of the animal, finally entering the hide of the back from below and not from the outside.

Its early wanderings are still untraced—a fact which is hardly surprising when it is remembered that the grub on hatching measures less than the twenty-fifth of an inch in length. There are a few very interesting cases well established where human beings have been subject to warble-fly attack, and where half-grown warble-grubs have been removed from beneath the skin after having wandered extensively over different parts of the body for a period of two or three months.

Whether the newly hatched grubs have any uniform method of behaviour on first penetrating the skin of cattle we do not know, but after an interval of about two months we begin to find them in the wall of the gullet, and from this half-way house they proceed to the back, many of them entering the spinal canal on the way.

During October and November this year gullets have been obtained almost daily from the slaughter-house and examined for the grubs, and the result has entirely corroborated the statements of recent investigators. Every gullet so examined has yielded one or more grubs, though no very severe case has so far been met with, the greatest number of grubs in any one gullet being twelve. They are not, of course, in the *cavity* of the gullet, but deeply embedded in its wall, between the inner lining of the tube and the outer layer of muscle. They average about half an inch in length, and are smooth and glassy, and anyone only familiar with the last stages of the grub in the hide would certainly fail to recognise them.

The new facts tend to show that the warble-fly is even more injurious to cattle than we formerly thought it, for, in addition to the loss of condition and of milk due to gadding, and the destruction of the hides and injury to health by the tumours in the back, we have all the ills which must result from the wandering of numerous maggots through the tissues of the animal's body.

Since the eggs are not laid on the back, there seems no reason why smearing the backs of cattle to keep off the fly should be of any use, and experiment has clearly proved that it is in fact useless, though many farmers continue to practise it and believe in its efficiency. Why not smear the legs and the lower part of the body instead ? It would seem an easy thing to do—after the method of sheep dipping—and it would at all events affect the regions where we now know that the fly lays its eggs.

There is little that is satisfactory to report concerning bee disease. The chief interest at the moment centres round the distribution of the bee mite, and, either from lack of proper examination or from reluctance to admit the presence of the parasite for commercial reasons, information of its occurrence in foreign countries comes in very slowly. It is now known to occur all over France, and its presence in Switzerland is admitted, but it has not been notified from Germany, and experts in the United States declare that they have sought for it in vain. Now bees in the United States are certainly subject to a disease involving wholesale mortality and indistinguishable in its symptoms from what used to be called Isle of Wight disease, and if it should really prove that the mites have not reached that country the inference would be obvious.

Altogether the subject is full of difficulties, because though the disease in this country is almost always accompanied by the presence of the mite, there are many facts difficult to explain with regard to individual bees. A hive which is dying out is almost certain to be found badly infested by the mite, but, on the other hand, some of the bees which are quite active are found to have many mites in their breathing tubes, while among the "crawlers" it is not rare to find individuals practically mite-free. The matter is at present far from being completely understood.

CECIL WARBURTON.

School of Agriculture,
Cambridge.

Royal Agricultural Society of England.

(*Established May 9th,* 1838, *as the* English Agricultural Society, *and incorporated by Royal Charter on March 26th,* 1840.)

Patron.

HIS MOST GRACIOUS MAJESTY THE KING.

President for 1923.

LIEUT-COL. E. W. STANYFORTH.

Trustees.

Year when first elected on Council.	
1919	H.R.H. The Prince of Wales, K.G., *York House, S.W.*1.
1922	H.R.H. The Duke of York, K.G., *Buckingham Palace, S.W.*1.
1905	Adeane, Charles, C.B., *Babraham Hall, Cambridge.*
1903	Ailwyn, Lord, K.C.V.O., K.B.E., *Honingham, Norwich.*
1895	Bedford, Duke of, K.G., *Woburn Abbey, Bedfordshire.*
1871	Bowen-Jones, Sir J. B., Bart., *Council House Court, Shrewsbury.*
1893	Cornwallis, Col. F. S. W., *Linton Park, Maidstone, Kent.*
1885	Coventry Earl of, *Croome Court, Severn Stoke, Worcestershire.*
1898	Devonshire, Duke of, K.G., *Chatsworth, Bakewell, Derbyshire.*
1904	Greenall, Sir Gilbert, Bart., C.V.O., *Walton Hall, Warrington.*
1899	Northbrook, Earl of, *Stratton, Micheldever, Hampshire.*
1881	Parker, Hon. Cecil T., *The Grove, Corsham, Wiltshire.*

Vice-Presidents.

1897	Coltman-Rogers, C., *Stanage Park, Brampton Bryan.*
1887	Crutchley, Percy, *Sunninghill Lodge, Ascot, Berkshire.*
1908	Derby, Earl of, K.G., *Knowsley, Prescot, Lancashire.*
1900	Greaves, R. M., *Wern, Portmadoc, North Wales.*
1910	Harlech, Lord, *Brogyntyn, Oswestry, Shropshire.*
1904	Mathews, Ernest, C.V.O., *Little Shardeloes, Amersham, Bucks.*
1915	Portland, Duke of, K.G., *Welbeck Abbey, Worksop, Notts.*
1914	Powis, Earl of, *Powis Castle, Welshpool, Mont.*
1897	Reynard, Frederick, *Sunderlandwick, Driffield, Yorkshire.*
1905	Richmond and Gordon, Duke of, K.G., *Goodwood, Chichester.*
1891	Stanyforth, Lt.-Col. E. W., *Kirk Hammerton Hall, York.*
1907	Yarborough, Earl of, *Brocklesby Park, Lincolnshire.*

Ordinary Members of the Council.

1910	Alexander, Hubert D., *The Croft, Sully, near Cardiff* (*Glamorgan*).
1905	Aveling, Thomas L., *Boley Hill House, Rochester* (*Kent*).
1911	Behrens, Major Clive, *Swinton Grange, Malton* (*Yorks, N. Riding*).
1922	Bell, John, *Wollaton, Nottingham* (*Nottinghamshire*).
1919	Bentinck, Lord Henry, M.P., *Underley Hall, Kirkby Lonsdale* (*Westmorland*).
1921	Bledisloe, Lord, K.B.E., *Lydney Park* (*Gloucestershire*).
1922	Brocklebank, Rev. C. H., *Bartlow House, near Cambridge* (*Cambridgeshire*).
1906	Brocklehurst, Henry Dent, *Sudeley Castle, Winchcombe* (*Glos.*).
1910	Brown, Davis, *Marham Hall, King's Lynn* (*Norfolk*).
1918	Burke, U. Roland, *Chatsworth, Bakewell* (*Derbyshire*).
1921	Burrell, Sir Merrik R., Bart., *Knepp Castle, Horsham* (*Sussex*).
1905	Carr, Richardson, *Mill Lawn, Burley, Brockenhurst, Hants.* (*Hertfordshire*).
1913	Chapman, W. W., 4, *Mowbray House, Norfolk Street, W.C.*2 (*London*).
1919	Combes, Daniel, *Dinton Manor, Salisbury* (*Wiltshire*).
1921	Courthope, Lieut.-Col. G. L., M.C., M.P., *Whiligh* (*Sussex*).
1917	Curre, Col. Edward, *Itton Court, Chepstow* (*Monmouthshire*).
1921	Davies, Lt.-Col. David, M.P., *Broneirion, Llandinam* (*North Wales*).

Ordinary Members of the Council (*continued*).

Year when first elected on Council.	
1905	Eadie, John T. C., *Aldershawe, Lichfield, Staffs.* (*Derbyshire*).
1913	Evens, John, *Burton, near Lincoln* (*Lincolnshire*).
1905	Falconer, James, *Northbrook Farm, Micheldever Station* (*Hampshire*)
1921	Fenwick, E. Guy, *North Luffenham Hall, Stamford* (*Rutland*).
1916	Fitzherbert-Brockholes, W., C.B.E., *Claughton Hall, Garstang* (*Lancs.*).
1916	France-Hayhurst, Capt. W. H., *Bostock Hall, Middlewich* (*Cheshire*).
1922	Gates, B. J., *Wing Park, Leighton Buzzard* (*Buckinghamshire*).
1916	Gilbey, Sir Walter, Bart., *Elsenham Hall, Elsenham* (*Essex*).
1921	Groom, Hubert, *Sunderland, Docking, King's Lynn* (*Norfolk*)
1905	Harris, Joseph, *Brackenbrough Tower, Carlisle* (*Cumberland*).
1903	Harrison, William, *Albion Iron Works, Leigh* (*Lancashire*).
1909	Hazlerigg, Sir Arthur G., Bart., *Noseley Hall* (*Leicestershire*).
1905	Hiscock, Arthur, *Manor France Farm, Stourpaine, Blandford* (*Dorset*).
1919	Hobbs, Robert, *Kelmscott, Lechlade, Glos.* (*Oxfordshire*).
1900	Howard, John Howard, *Clapham Park, near Bedford* (*Bedfordshire*).
1913	Kelly, Major Dunbar, D.S.O., *Godinton, Ashford, Kent* (*Surrey*).
1912	Lane-Fox, Lt.-Col. G. R., M.P., *Bramham Park, Boston Spa* (*Yorks, W. Riding*).
1918	Llewelyn, Col. C. Venables, *Llysdinam, Newbridge-on-Wye* (*South Wales*).
1909	Luddington, J. L., *Wallington Hall, King's Lynn* (*Cambridgeshire*).
1909	Mansell, Alfred, *College Hill, Shrewsbury* (*Shropshire*).
1922	Matthews, Frank P., 27 *Cavendish Square, W.*1 (*London*).
1904	Middleton, Christopher, *Vane Terrace, Darlington* (*Durham*).
1922	Mildmay of Flete, Lord, *Flete, Ivybridge* (*Devon*).
1922	Miln, G. P., *Abbot's Lodge, Chester* (*Cheshire*).
1920	Montgomery, Andrew M., *Netherhall, Castle Douglas* (*Scotland*).
1916	Mount, Sir William A., Bart., C.B.E., *Wasing Place, Reading* (*Berkshire*).
1911	Myatt, John, *Lincoln House, Shenstone, Lichfield* (*Staffordshire*).
1922	Neilson, R. B., *Holmwood, Sandiway* (*Cheshire*).
1922	Newton, Sir Douglas, K.B.E., M.P., *Croxton Park, St. Neots* (*Huntingdonshire*).
1915	Oliver-Bellasis, Capt. R., *Shilton House, Coventry* (*Warwickshire*).
1910	Overman, Henry, *Weasenham, King's Lynn* (*Norfolk*).
1909	Patterson, R. G., *Acton Hill, Stafford* (*Staffordshire*).
1912	Perkin, A. W., *Greenford Green, Harrow* (*Middlesex*).
1921	Platt, Major Eric J. W., *Gorddinog, Llanfairfechan* (*North Wales*).
1906	Plumptre, H. Fitzwalter, *Goodnestone, near Canterbury* (*Kent*).
1916	Price, F. Hamlyn, 7, *Harley Gardens, The Boltons, S.W.*10 (*London*).
1905	Rea, George Grey, *Doddington, Wooler R.S.O.* (*Northumberland*).
1920	Ridley, Arthur H., *Park End, Wark-on-Tyne* (*Northumberland*).
1913	Seward, Capt. Percy W., *Weston, Petersfield* (*Hampshire*).
1922	Sherwood, S. R., *Playford, Ipswich* (*Suffolk*).
1921	Silcock, T. B., *Arthfield House, Poulton-le-Fylde* (*Lancashire*).
1907	Smith, Fred, *Deben Haugh, Woodbridge* (*Suffolk*).
1921	*Somerville, Prof. W., M.A., D.Sc., *School of Rural Economy, Oxford.*
1912	Strachie, Lord, *Sutton Court, Pensford* (*Somerset*).
1922	Strutt, Hon. Edward G., *Whitelands, Hatfield Peverel* (*Essex*).
1923	Tanner, E. Craig, *Eyton-on-Severn, Cross Houses* (*Shropshire*).
1918	Taylor, C. Howard, *Middlewood Hall, Barnsley* (*Yorks, W. Riding*).
1920	Thornton, F. H., *Kingsthorpe Hall, Northampton* (*Northants*).
1907	Tindall, C. W., *Park House, Louth* (*Lincolnshire*).
1916	Trant, Brooking, *Trethawle, Liskeard* (*Cornwall*).
1904	Turner, Arthur P., *Fayre Oakes, Hereford* (*Herefordshire*).
1920	Walker-Tisdale, C. W., *The Dairy, Northallerton* (*Yorks, N. Riding*).
1889	Wheeler, Col. E. Vincent V., *Newnham Court, Tenbury* (*Worcs.*).
1921	*Whetham, C. Dampier, M.A., F.R.S., *Upwater Lodge, Cambridge.*
1918	Wickham-Boynton, T. L., *Burton Agnes Hall* (*Yorks, E. Riding*).
1916	Wrench, Rt. Hon. Frederick, *Killacoona, Hythe, Kent* (*Ireland*).

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* *Nominated Member of Council.*

STANDING COMMITTEES.

⁂ Under By-Law 39, the President is a Member *ex officio* of all Committees, and the Trustees and Vice-Presidents are Members *ex officio* of all Standing Committees except the Committee of Selection.

The Honorary Director is a Member ex officio of all Committees.

Finance Committee.

Adeane, C. (*Chairman*)
Devonshire, Duke of
Northbrook, Earl of
Ailwyn, Lord
Burrell, Sir Merrik R., Bart.
Greenall, Sir G., Bart.
Aveling, T. L.
Carr, Richardson
Cornwallis, Col.
Crutchley, Percy
Greaves, R. M.
Harrison, W.
Mansell, Alfred.
Mathews, Ernest
Wheeler, Col.

Journal and Education Committee.

Cornwallis, Col. (*Chairman*)
Bledisloe, Lord
Mildmay of Flete, Lord
Bowen-Jones, Sir J. B., Bart.
Burrell, Sir Merrik R., Bart.
Mount, Sir W. A., Bart.
Adeane, C.
Brocklebank, Rev. C. H.
Chapman, W. W.
Coltman-Rogers, C.
Courthope, Lt.-Col. G. L.
Lane-Fox, Lt.-Col. G. R.
Luddington, J. L.
Mansell, Alfred
Mathews, Ernest
Plumptre, H. F.
Price, F. Hamlyn
Wheeler, Col.

Chemical Committee.

Luddington, J. L. (*Chairman*)
Bledisloe, Lord
Harlech, Lord
Bowen-Jones, Sir J. B., Bart.
Brocklehurst, H. D.
Falconer, J.
Greaves, R. M.
Howard, John Howard
Middleton, C.
Neilson, R. B.
Oliver-Bellasis, Capt. R.
Patterson, R. G.
Reynard, F.
Silcock, T. B.
Smith, Fred.
Somerville, Prof.
Taylor, C. Howard
Tindall, C. W.
Turner, A. P.
Walker-Tisdale, C. W.
Whetham, C. D.

Botanical and Zoological Committee.

Coltman-Rogers, C. (*Chairman*)
Bowen-Jones, Sir J. B., Bart.
Hazlerigg, Sir A. G., Bart.
Newton, Sir Douglas
Brocklehurst, H. D.
Brown, Davis
Cornwallis, Col.
Courthope, Lt.-Col. G. L.
France-Hayhurst, Capt.
Llewelyn, Col.
Luddington, J. L.
Miln, G. P.
Plumptre, H. F.
Taylor, C. Howard
Wheeler, Col.

Veterinary Committee.

Northbrook, Earl of (*Chairman*)
Ailwyn, Lord
Mildmay of Flete, Lord
Parker, Hon. C. T.
Burrell, Sir Merrik R., Bart.
Gilbey, Sir Walter, Bart.
*McFadyean, Prof. Sir J.
Behrens, Major Clive
Bell, John
Brown, Davis
Burke, U. Roland
Carr, Richardson
Chapman, W. W.
Crutchley, Percy
Eadie, J. T. C.
Fenwick, E. Guy
Fitzherbert-Brockholes, W.
Gates, B.J.
Harris, Joseph
Mansell, Alfred
*Master of Farriers Company
Mathews, Ernest
Montgomery, A. M.
Overman, Henry
*President of Royal College of Vety. Surgeons
Smith, Fred
Stanyforth, Lt.-Col.
Thornton, F. H.

* *Professional Members of Veterinary Committee not Members of Council.*

Stock Prizes Committee.

Carr, Richardson (*Chairman*)
Coventry, Earl of
Northbrook, Earl of
Harlech, Lord
Bowen-Jones, Sir J. B., Bart.
Burrell, Sir Merrik R., Bart.
Greenall, Sir G., Bart.
Behrens, Major Clive
Brocklebank, Rev. C. H.
Brown, Davis
Chapman, W. W.
Coltman-Rogers, C.
Crutchley, Percy
Eadie, J. T. C.
Fenwick, E. Guy
Greaves, R. M.
Groom, Hubert
Hobbs, Robert
Mansell, Alfred
Mathews, Ernest
Montgomery, A. M.
Myatt, John
Overman, Henry
Rea, G. G.
Reynard, F.
Sherwood, S. H.
Silcock, T. B.
Smith, Fred.
Tindall, C. W.
Turner, A. P.
Wickham-Boynton, T. L.
The Stewards of Live Stock

Implement Committee.

Stanyforth, Lt.-Col. (*Chairman*)
Bowen-Jones, Sir J. B., Bart.
Aveling, T. L.
Bell, John
Burke, U. Roland
Courthope, Lt.-Col. G. L.
Crutchley, Percy
Evens, John
Falconer, J.
Greaves, R. M.
Harrison, W.
Howard, John Howard
Luddington, J. L.
Middleton, C.
Myatt, John
Overman, Henry
Patterson, R. G.
Sherwood, S. R.
Wheeler, Col.
The Stewards of Implements

Showyard Works Committee.

Greenall, Sir G., Bart. (*Chairman*)
Burrell, Sir Merrik R., Bart.
Hazlerigg, Sir A. G., Bart.
Aveling, T. L.
Bell, John
Burke, U. Roland
Carr, Richardson
Crutchley, Percy
Eadie, J. T. C.
Harrison, W.
Howard, John Howard
Neilson, R. B.
Overman, Henry
Rea, G. G.
Reynard, F.
Ridley, A. H.
Stanyforth, Lt.-Col.
Tindall, C. W.

Committee of Selection.

Parker, Hon. C. T. (*Chairman*)
The President
Devonshire, Duke of
Ailwyn, Lord
Harlech, Lord
Hazlerigg, Sir A.G., Bart.
Courthope, Lt.-Col. G. L.
Greaves, R. M.

And the Chairman of each of the Standing Committees.

Dairy and Produce Committee.

Mathews, Ernest (*Chairman*)
Bledisloe, Lord
Parker, Hon. C. T.
Burrell, Sir Merrik R., Bart.
Carr, Richardson
Crutchley, Percy
Evens, John
Fenwick, E. Guy
Fitzherbert-Brockholes, W.
Greaves, R. M.
Neilson, R. B.
Oliver-Bellasis, Capt R.
Overman, Henry
Plumptre, H. F.
Silcock, T. B.
Smith, Fred.
Somerville, Prof.
Wheeler, Col.
Whetham, C. D.
Williams, Prof. R. Stenhouse

Research Committee.

Devonshire, Duke of (*Chairman*)
Bledisloe, Lord
Burrell, Sir Merrik, R., Bart.
Hazlerigg, Sir A. G., Bart.
Adeane, C.
Evens, John
Luddington, J. L.
Mathews, Ernest
Overman, Henry
Somerville, Prof. W.
Whetham, C. D.

General Newcastle Committee.

The Whole Council, with the following representatives of the Local Committee :—

LORD MAYOR OF NEWCASTLE	GILLESPIE, J. J.	WALKER, J. D.
NORTHUMBERLAND, Duke of	ROWE, T. W.	OLIVER, A. M.
DARNELL, E.	STEELE, W. J.	(*Local Secretary.*)

Honorary Director.—Sir GILBERT GREENALL, Bart., C.V.O.

Secretary.—T. B. TURNER, 16, Bedford Square, W.C.1.

Editor of Journal—C. S. ORWIN, M.A., *Agricultural Economics Institute, Oxford.*
Consulting Chemist.—Dr. J. AUGUSTUS VOELCKER, M.A., 1, *Tudor St., E.C.*4.
Consulting Veterinary Surgeon.—Prof. Sir JOHN MCFADYEAN, *Royal Veterinary College, Camden Town, N.W.*1.
Botanist.—Prof. R. H. BIFFEN, F.R.S., *School of Agriculture, Cambridge.*
Zoologist.—CECIL WARBURTON, M.A., *School of Agriculture, Cambridge.*
Consulting Engineer.—F. S. COURTNEY, 25, *Victoria Street, Westminster, S.W.*1.
Surveyor.—CHARLES H. R. NAYLOR, *Smith's Bank Chambers, Derby.*
Publisher.—JOHN MURRAY, 50A, *Albemarle Street, W.*1.
Solicitors.—GARRARD, WOLFE, GAZE & CLARKE, 13, *Suffolk Street, S.W.*1.
Bankers.—WESTMINSTER BANK, 1, *St. James's Square, London, S.W.*1.

DISTRIBUTION OF GOVERNORS AND MEMBERS OF THE SOCIETY, AND OF ORDINARY MEMBERS OF THE COUNCIL.

ELECTORAL DISTRICT	DIVISION	NUMBER OF GOVERNORS AND MEMBERS	NUMBER OF ORDINARY MEMBERS OF COUNCIL	ORDINARY MEMBERS OF COUNCIL
A.	BEDFORDSHIRE	117	1	J. H. Howard.
	CHESHIRE	617	3	Capt. W. H. France-Hayhurst; G. P. Miln; R. B. Neilson.
	CORNWALL	114	1	Brooking Trant.
	DERBYSHIRE	323	2	U. Roland Burke; J. T. C. Eadie.
	DORSET	123	1	A. Hiscock.
	HAMPSHIRE AND CHANNEL ISLANDS	372	2	J. Falconer; Capt. Percy Seward.
	HERTFORDSHIRE	262	1	Richardson Carr.
	LANCASHIRE AND ISLE OF MAN	504	3	W. Fitzherbert-Brockholes; W. Harrison; T. B. Silcock.
	MIDDLESEX	111	1	A. W. Perkin.
	MONMOUTHSHIRE	110	1	Col. Edward Curre.
	NORFOLK	545	3	Davis Brown; Hubert Groom; Henry Overman.
	NORTHAMPTONSHIRE	244	1	F. H. Thornton.
	NORTHUMBERLAND	355	2	G. G. Rea; A. H. Ridley.
	STAFFORDSHIRE	342	2	John Myatt; R. G. Patterson.
	WORCESTERSHIRE	222	1	Col. E. V. V. Wheeler.
	YORKSHIRE, N.R.	307	2	Major Clive Behrens; C. W. Walker-Tisdale.
	SCOTLAND	268	1	A. M. Montgomery.
		—4,936	—28	
B.	BUCKINGHAMSHIRE	181	1	B. J. Gates.
	DEVON	203	1	Lord Mildmay of Flote.
	DURHAM	301	1	C. Middleton.
	ESSEX	317	2	Sir Walter Gilbey; Hon. E. G. Strutt.
	HEREFORDSHIRE	187	1	A. P. Turner.
	LEICESTERSHIRE	218	1	Sir A. G. Hazlerigg.
	LONDON	604	3	W. W. Chapman; F. P. Matthews; F. Hamlyn Price.
	NOTTINGHAMSHIRE	218	1	John Bell.
	RUTLAND	41	1	E. Guy Fenwick.
	SHROPSHIRE	413	2	Alfred Mansell; E. Craig Tanner.
	SUFFOLK	340	2	S R. Sherwood; Fred Smith.
	SURREY	239	1	Major Dunbar Kelly.
	WILTSHIRE	221	1	D. Combes.
	YORKSHIRE, W.R.	410	2	Lt.-Col. G. R. Lane-Fox; C. Howard Taylor.
	SOUTH WALES	173	1	Col. C. Venables Llewelyn.
		—4,066	—21	
C.	BERKSHIRE	209	1	Sir W. A. Mount.
	CAMBRIDGESHIRE	366	2	Rev. C. H. Brocklebank; J. L. Luddington.
	CUMBERLAND	175	1	Joseph Harris.
	GLAMORGAN	182	1	H. D. Alexander.
	GLOUCESTERSHIRE	356	2	Lord Bledisloe; H. D. Brocklehurst.
	HUNTINGDONSHIRE	61	1	Sir Douglas Newton.
	KENT	475	2	T. L. Aveling; H. F. Plumptre.
	LINCOLNSHIRE	450	2	John Evens; C. W. Tindall.
	OXFORDSHIRE	222	1	Robert Hobbs.
	SOMERSET	202	1	Lord Strachie.
	SUSSEX	428	2	Sir Merrik R. Burrell; Lt.-Col. G. L. Courthope.
	WARWICKSHIRE	261	1	Capt. R. Oliver-Bellasis.
	WESTMORLAND	92	1	Lord Henry Bentinck.
	YORKSHIRE, E.R.	167	1	T. L. Wickham-Boynton.
	IRELAND	104	1	Right Hon. F. Wrench.
	NORTH WALES	306	2	Major David Davies; Major E. J. W. Platt.
		—4,056	—22	
FOREIGN COUNTRIES		276		
MEMBERS WITH NO ADDRESSES		32		*Prof. W. Somerville. *C. Dampier Whetham.
GRAND TOTALS		13,366	71	

* Nominated Members of Council.

TABLE SHOWING THE NUMBER OF GOVERNORS AND MEMBERS IN EACH YEAR FROM THE ESTABLISHMENT OF THE SOCIETY.

Year ending with Show of	President of the Year	Governors		Members			Total
		Life	Annual	Life	Annual	Honorary	
1839	3rd Earl Spencer	—	—	—	—	—	1,100
1840	5th Duke of Richmond	86	189	146	2,434	5	2,860
1841	Mr. Philip Pusey	91	219	231	4,047	7	4,595
1842	Mr. Henry Handley	101	211	328	5,194	15	5,849
1843	4th Earl of Hardwicke	94	209	429	6,155	15	6,902
1844	3rd Earl Spencer	95	214	442	6,161	15	6,927
1845	5th Duke of Richmond	94	198	527	5,899	15	6,733
1846	1st Viscount Portman	92	201	554	6,105	19	6,971
1847	6th Earl of Egmont	91	195	607	5,478	20	6,391
1848	2nd Earl of Yarborough	93	186	648	5,387	21	6,335
1849	3rd Earl of Chichester	89	178	582	4,643	20	5,512
1850	4th Marquis of Downshire	90	169	627	4,356	19	5,261
1851	5th Duke of Richmond	91	162	674	4,175	19	5,121
1852	2nd Earl of Ducie	93	156	711	4,002	19	4,981
1853	2nd Lord Ashburton	90	147	739	3,928	19	4,923
1854	Mr. Philip Pusey	88	146	771	4,152	20	5,177
1855	Mr. William Miles, M.P.	89	141	795	3,838	19	4,882
1856	1st Viscount Portman	85	139	839	3,896	20	4,979
1857	Viscount Ossington	83	137	896	3,933	19	5,068
1858	6th Lord Berners	81	133	904	4,010	18	5,146
1859	7th Duke of Marlborough	78	130	927	4,008	18	5,161
1860	5th Lord Walsingham	72	119	927	4,047	18	5,183
1861	3rd Earl of Powis	84	90	1,113	3,328	18	4,633
1862	H.R.H. The Prince Consort 1st Viscount Portman	83	97	1,151	3,475	17	4,823
1863	Viscount Eversley	80	88	1,263	3,735	17	5,183
1864	2nd Lord Feversham	78	45	1,343	4,013	17	5,496
1865	Sir E. C. Kerrison, Bart., M.P.	79	81	1,386	4,190	16	5,752
1866	1st Lord Tredegar	79	84	1,395	4,049	15	5,622
1867	Mr. H. S. Thompson	77	82	1,388	3,903	15	5,465
1868	6th Duke of Richmond	75	74	1,409	3,888	15	5,461
1869	H.R.H. The Prince of Wales, K.G.	75	73	1,417	3,864	17	5,446
1870	7th Duke of Devonshire	74	74	1,511	3,764	15	5,436
1871	6th Lord Vernon	72	74	1,589	3,896	17	5,648
1872	Sir W. W. Wynn, Bart., M.P.	71	73	1,655	3,953	14	5,768
1873	2nd Earl Cathcart	74	62	1,832	3,936	12	5,916
1874	Mr. Edward Holland	76	58	1,944	3,756	12	5,846
1875	1st Viscount Bridport	79	79	2,058	3,918	11	6,145
1876	2nd Lord Chesham	83	78	2,164	4,013	11	6,349
1877	Lord Skelmersdale	81	76	2,239	4,073	17	6,486
1878	Col. Kingscote, C.B., M.P.	81	72	2,328	4,130	26	6,637
1879	H.R.H. The Prince of Wales, K.G.	81	72	2,453	4,700	26	7,332
1880	9th Duke of Bedford	83	70	2,673	5,083	20	7,929
1881	Mr. William Wells	85	69	2,765	5,041	19	7,979
1882	Mr. John Dent Dent	82	71	2,849	5,059	19	8,080
1883	6th Duke of Richmond and Gordon	78	71	2,979	4,952	19	8,099
1884	Sir Brandreth Gibbs	72	72	3,203	5,408	21	8,776
1885	Sir M. Lopes, Bart., M.P.	71	69	3,356	5,619	20	9,135
1886	H.R.H. The Prince of Wales, K.G.	70	61	3,414	5,569	20	9,134
1887	Lord Egerton of Tatton	71	64	3,440	5,387	20	8,982
1888	Sir M. W. Ridley, Bart., M.P.	66	56	3,521	5,225	16	8,884
1889	HER MAJESTY QUEEN VICTORIA	73	58	3,567	7,153	15	10,866
1890	Lord Moreton	122	58	3,846	6,941	17	10,984
1891	2nd Earl of Ravensworth	117	60	3,811	6,921	19	10,928
1892	1st Earl of Feversham	111	69	3,784	7,066	20	11,050
1893	1st Duke of Westminster, K.G.	107	74	3,786	7,138	21	11,126
1894	8th Duke of Devonshire, K.G.	113	73	3,798	7,212	22	11,218
1895	Sir J. H. Thorold, Bart.	120	80	3,747	7,179	23	11,149
1896	Sir Walter Gilbey, Bart.	126	83	3,695	7,253	23	11,180
1897	H.R.H. The Duke of York, K.G.	126	83	3,705	7,285	24	11,223
1898	5th Earl Spencer, K.G.	121	79	3,687	7,182	25	11,094
1899	Earl of Coventry	116	75	3,656	7,009	23	10,879
1900	H.R.H. The Prince of Wales, K.G.	111	71	3,628	6,832	24	10,666
1901	3rd Earl Cawdor	102	70	3,564	6,338	27	10,033
1902	H.R.H. Prince Christian, K.G.	100	69	3,500	5,955	26	9,650
1903	H.R.H. The Prince of Wales, K.G.	99	62	3,439	5,771	27	9,398
1904	16th Earl of Derby, K.G.	96	68	3,375	5,906	32	9,477
1905	9th Lord Middleton	89	78	3,212	5,758	33	9,170
1906	Mr. F. S. W. Cornwallis	94	155	3,132	6,189	30	9,600
1907	Earl of Yarborough	91	174	3,076	6,299	29	9,669
1908	Duke of Devonshire	89	178	3,019	6,442	30	9,758
1909	7th Earl of Jersey, G.C.B.	91	177	2,951	6,696	31	9,946
1910	Sir Gilbert Greenall, Bart.	86	166	2,878	6,934	31	10,095
1911	HIS MAJESTY KING GEORGE V.	85	168	2,805	7,191	30	10,279
1912	9th Lord Middleton	85	170	2,741	7,283	30	10,309
1913	Earl of Northbrook	89	168	2,691	7,474	26	10,448
1914	Earl of Powis	89	173	2,626	7,629	28	10,545
1915	Duke of Portland, K.G.	88	184	2,517	7,313	28	10,130
1916	7th Duke of Richmond and Gordon, K.G.	83	185	2,427	7,526	27	10,248
1917	Mr. Charles Adeane, C.B.	93	210	2,412	8,214	26	10,955
1918	Hon. Cecil T. Parker	102	224	2,395	8,226	25	10,972
1919	Sir J. B. Bowen-Jones, Bart.	119	236	2,411	8,558	24	11,348
1920	H.R.H. The Prince of Wales, K.G.	129	256	2,402	9,208	25	12,020
1921	Mr. R. M. Greaves	137	275	2,374	10,098	24	12,908
1922	H.R.H. The Duke of York, K.G.	144	287	2,317	10,596	22	13,366

STATEMENT made to the Council by the Chairman of the Finance Committee, on presenting the Accounts for the year 1922.

Mr. Adeane said the accounts for the year 1922, which he now presented to the Council, were unusually swollen, owing to the inclusion of considerable investment transactions concluded during that year. On the credit side of the account it would be noticed that there was brought forward a balance of £4,041 1*s.*, the ordinary receipts amounted to £17,278 2*s.*, and the extraordinary receipts to £2,938 9*s.* 10*d.*, total £24,257 12*s.* 10*d.* And in accordance with the decision of the Council in May last the Society had disposed of its holding in 5 per cent. War Stock, which realized £71,042 8*s.*; making a grand total of £95,300 0*s.* 10*d.* On the debit side the ordinary payments amounted to £14,441 4*s.* 2*d.*, investments were £75,962 14*s.* 9*d.* (this figure represented a new investment of £5,000 and the purchase of Conversion Loan in lieu of War Loan); other payments amounted to £1,708 3*s.* 1*d.*; total £92,112 2*s.* The account was balanced by cash at bank and in hand amounting to £3,187 18*s.* 10*d.* If they set aside the balances and extra payments and receipts it would be seen that the ordinary receipts exceeded the ordinary payments by a sum of £2,837, which was considerably more than their estimate last year. With regard to the balance-sheet their invested funds now stood at £82,130, as against £73,727, and showed an increase of £8,403 due to further investments during the year.

Mr. Adeane then presented the following estimate for the present year:—

FORECAST OF ORDINARY RECEIPTS AND EXPENDITURE FOR 1923.

(Other than in respect of the Show.)

Prepared by direction of the Finance Committee on the basis of the recommendations of September 21, 1905, made by the Special Committee.

Actual Figures for 1922. £	*Receipts.*	£
11,799	From Subscriptions for 1923 of Governors and Members	11,800
126	From Interest on Daily Balances	150
3,295	From Interest on Investments	3,898
553	From Sales of Journals, Text Books, Pamphlets, etc.	550
275	Advertisements in Journal	275
1,210	Income Tax Repaid	
100	Miscellaneous	
17,358		16,673

£	*Expenditure.*	£
2,849	Salary of Secretary and Official Staff	2,778
418	Pensions to Officials	418
967	Rent, Lighting, Cleaning, Wages, etc. (say)	1,000
753	Printing and Stationery	800
382	Postage and Telegrams	450
301	Miscellaneous	400
1,689	Journal	2,000
423	Chemical Department	420
250	Botanical Department	250
200	Zoological Department	200
203	Veterinary Department	203
100	Grant to Research Institute, University College, Reading	100
100	Consulting Engineer	100
22	Examinations for National Diploma (R.A.S.E. Share)	220
3,500	Amount set aside towards loss on Shows	3,500
12,157		12,889
	Exceptional Expenditure.	
2,000	Scientific Research	2,000
—	Painting and Repairs to Society's House (say)	500
105	Printing Pamphlets	
92	Library Binding and Purchase of Books	100
88	Printing Farm Account Books	
	Guarantee to Joint Committee of British Stock Breeders	50
14,442		15,489

		£
	Estimated Receipts	16,673
	Estimated Expenditure	15,489
Credit balance. 2,537	Estimated Receipts over Expenditure	1,184

There was naturally, Mr. ADEANE added, a desire to see the charges connected with the Show reduced, and this would be carefully considered in the autumn, but the Society would have to proceed cautiously. The Council had been fully justified in the line it took in 1919 and 1921, when the charges were put up, and they had had a fair test in the show at Cambridge. If the charges at Cambridge had been pre-war the loss would have been £18,371. If they had been the same as at Darlington the loss would have been £10,806. As it was, the latest scale of charges enabled the Show to give a profit of only £57.

STATEMENT OF RECEIPTS AND EXPEN-

JULY 4 TO

Receipts.

Corresponding figures for 1921. £	Receipts.		£ s. d.	£ s. d.
2,000	Subscription from Town of Cambridge			2,000 0 0
3,434	Prizes given by Agricultural and Breed Societies and others		8,527 9 6	
1,318	Prizes given by Cambridge Local Committee		984 0 0	
4,752				4,511 9 6
	FEES FOR ENTRY OF IMPLEMENTS:—			
13,779	Implement Exhibitors' Payments for Shedding		12,198 16 0	
418	Non-Members' Fees for Entry of Implements		365 2 0	
140	Fees for Entry of "New Implements"		168 0 0	
14,337				12,731 18 0
	FEES FOR ENTRY OF LIVE STOCK:—			
10	By 4 Members' Entries @ 5*l.*		20 0 0	
5,337	2,142 Members' Entries @ 3*l.*		6,426 0 0	
	3 Members Entries @ 2*l.*		6 0 0	
2,411	1,787 Members' Entries at 30*s.*		2,680 10 0	
281	381 Members' Entries @ 1*l.*		381 0 0	
46	36 Members' Entries @ 15*s.*		27 0 0	
3	75 Members' Entries @ 10*s.*		37 10 0	
18	78 Members' Entries @ 5*s.*		19 10 0	
90	Entrance fees		121 1 0	
612	99 Non-Members' Entries @ 6*l.*		594 0 0	
27	77 Non-Members' Entries @ 3*l.*		231 0 0	
10	1 Non-Members' Entry @ 2*l.*		2 0 0	
26	1 Entry @ 10*s.*		10 0	
	7 Entries @ 5*s.*		1 15 0	
8,871				10,547 16 0
	FEES FOR ENTRY OF POULTRY:—			
125	By Members:—551 Entries @ 5*s.*		137 15 0	
358	By Non-Members:—643 Entries @ 10*s.*		321 10 0	
5	Entrance fees		9 0 0	
488				468 5 0
	OTHER ENTRY FEES:—			
107	Produce		84 5 0	
108	Rabbits		89 12 6	
83	Horse-jumping Competitions		137 15 0	
44	Plantation Competition		10 13 0	
	Orchard and Fruit Plantation Competition		13 0 0	
342				335 5 6
	CATALOGUE:—			
11	Extra Lines for Particulars of Implement Exhibits	20 10 0		
7	Woodcuts of "New Implements"	17 7 6		
1,405	Advertising in Catalogue	793 5 10		
59	Sales of Implement Section of Catalogue	40 12 11		
2,353	Sales of Combined Catalogue	1,965 7 4		
64	Sales of Jumping Programme	64 13 3		
3,899			2,901 16 10	
74	*Less* Commission on Sales		68 10 0	
3,825				2,833 6 10
£34,615	Carried forward			£33,428 0 10

DITURE OF THE SHOW AT CAMBRIDGE, JULY 8, 1922.

Expenditure.

Corresponding figures for 1921. £		£	s.	d.	£	s.	d.
	COST OF ERECTION OF SHOWYARD :—						
3,211	Transferring Society's Permanent Buildings from Derby to Cambridge (including taking down and re-erecting)	3,052	8	3			
1,845	Fencing round Showyard	1,693	16	7			
3,827	Implement Shedding	3,104	1	4			
9,281	Stock Shedding	10,015	6	2			
719	Poultry and Produce Sheds	626	15	2			
	Rabbit Shed	77	10	0			
599	Dairy	575	9	6			
130	Fodder Shed and Office	162	14	0			
312	Education and Forestry	378	10	9			
936	Grand Stand and Large Ring	1,013	9	1			
1,649	Various Offices and Stands	1,379	12	5			
964	Painting Signs and fixing do., Fencing and Judging Rings	968	18	6			
35	Insurance	74	1	10			
93	Ironmongery	28	7	0			
1,927	Hire of Canvas	4,232	13	2			
51	*New Timber*	—					
1,500	Provision for Renewal of Timber	1,500	0	0			
2,100	General Labour and Horse Hire (including Society's Clerk of Works)	1,289	14	7			
29	Bee Shed	34	11	2			
476	Temporary Entrances to Show	434	17	1			
331	*Extra Carriage*	—					
—	Horse-Shoeing Shed	93	16	0			
30,015		30,736	12	7			
40	*Less* Rent of 80 Flagpoles @ 10*s.*	40	0	0			
29,975					30,696	12	7
	SURVEYOR :—						
631	Salary, 450*l.* ; Assistant Surveyor's Salary, 200*l.* ; Travelling Expenses to London, 31*l.* 10*s.* ; Clerk, 10*l.* 10*s.* ; Petty Cash, 6*l.* 17*s.* 6*d.*				698	17	6
	PRINTING :—						
1,361	Printing of Prize Sheets, Entry Forms, Admission Orders, Circulars to Exhibitors, Prize Cards, Tickets and Miscellaneous	917	1	10			
65	Programmes for Members	38	2	4			
35	Plans of Showyard	20	6	11			
2,468	Printing of Catalogues	1,662	4	5			
171	Binding of Catalogues	251	3	3			
53	Carriage of Catalogues	31	10	11			
78	Printing Awards	39	4	9			
25	Programmes of Jumping Competitions	28	0	0			
4,256					2,987	14	5
	ADVERTISING :—						
158	Advertising Closing of Entries in Newspapers	140	6	3			
238	Advertising Show in Newspapers	236	15	7			
445	Bill Posting	271	9	3			
270	Printing of Posters	63	2	6			
24	Press Pamphlet	10	7	6			
7	Carriage	6	15	9			
11,42					728	16	10
	POSTAGE, CARRIAGE, &c. :—						
199	General Postage	196	14	5			
89	Postage of Badges to Members	67	4	11			
18	Carriage of Luggage	12	0	11			
306					276	0	3
11,368	AMOUNT OF PRIZES AWARDED, including 4,511*l.* 9*s.* 6*d.* given by various Societies and Cambridge Local Committee				11,547	2	0
	COST OF FORAGE FOR LIVE STOCK :—						
2,689	Hay, 775*l.* 11*s.* 10*d.* ; Straw, 972*l.* 16*s.* 6*d.* ; Green Food, 277*l.* 9*s.* 10*d.* ; Commission 25*l*				2,050	18	2
	JUDGES' FEES AND EXPENSES :—						
741	Judges of Miscellaneous Implements, 30*l.* 4*s.* 8*d.* ; Horses, 78*l.* 15*s.* 10*d.* ; Cattle, 218*l.* 2*s.* 0*d.* ; Sheep, 192*l.* 2*s.* 2*d.* ; Pigs, 86*l.* 5*s.* 1*d.* ; Goats, 4*l.* 2*s.* 0*d.* ; Poultry, 21*l.* 14*s.* 0*d.* ; Rabbits, 11*l.* 19*s.* 0*d.* ; Produce, 49*l.* 10*s.* 1*d.* ; Luncheons, 78*l.* 11*s.* 0*d.*				771	5	10
59	Badges for Judges and other Officials				82	19	6
119	Rosettes				77	16	2
£51,286	Carried forward				£49,918	3	3

Receipts (*contd.*).

Corresponding figures for 1921. £		£	*s.*	*d.*	£	*s.*	*d.*
34,615	Brought forward				33,428	0	10
	MISCELLANEOUS RECEIPTS :—						
1147	Admission to Horticultural Show	887	15	8			
964	Garage	965	0	6			
90	Rent for Railway Offices	157	7	2			
60	Premium for Cloak Rooms	60	0	0			
120	Rent for Ministry of Agriculture Pavilion	120	0	0			
287	Advertisements in Stock Prize Sheet	192	0	7			
7	*Advertisements in Showyard*		—				
—	Sale of Main Entrance	134	12	0			
20	Sale of Manure	27	10	0			
19	Miscellaneous	7	0	0			
15	Bath Chairs	25	2	6			
17	*Sale of Timber*		—				
2,746					2,576	8	5
	ADMISSIONS TO SHOWYARD :—						
1,868	Tuesday, July 4, @ 10*s.*	1,654	10	0			
8,080	Wednesday, July 5, @ 5*s.*	5,385	19	5			
8,388	Thursday, July 6, @ 3*s.*	4,637	16	4			
4,704	Friday, July 7, @ 3*s.*	3,099	12	8			
2,153	Saturday, July 8, @ 2*s.*	1,339	14	0			
560	Season Tickets	564	8	0			
501	Day Tickets	203	1	0			
26,254					16,885	1	5
	ENTRANCES TO HORSE RING :—						
337	Wednesday, July 5	336	17	0			
286	Thursday, July 6	248	10	0			
284	Friday, July 7	206	0	0			
172	Saturday, July 8	131	0	0			
930	Tickets sold for Reserved Enclosure	810	0	9			
2,009					1,732	7	9
	SALES :—						
240	Sales of Produce at Dairy				178	0	1
812	Auction Sales in Showyard (Share of Commission)				876	9	7
£66,676					£55,676	8	1

Examined, audited, and found correct, this 23rd day of Nov., 1922,

T. B. TURNER, Secretary.
DELOITTE, PLENDER, GRIFFITHS & Co., } Accountants.

JONAS M. WEBB, H. J. GREENWOOD, NEWELL P. SQUAREY, } Auditors on behalf of the Society.

Corresponding figures for 1921. £	**Expenditure** (*contd.*).	£	s.	d.	£	s.	d.
51,286	Brought forward				49,918	3	3
	GENERAL ADMINISTRATION :—						
174	*Stewards* :—Personal and Railway Expenses	177	12	9			
231	*Assistant Stewards* :—Personal and Railway Expenses	240	10	8			
442	*Official Staff* :—Extra Clerks, 251*l.* 12*s.* 4*d.*; Lodgings, 53*l.* 3*s.* 6*d.*; Maintenance of Clerks, 48*l.* 14*s.* 8*d.*; Travelling Expenses, 11*l.* 19*s.* 7*d.*; Secretary's Hotel and Travelling Expenses, 85*l.* 8*s.* 9*d.*	450	18	10			
215	*Finance Office* :—Finance Clerks, 24*l.* 10*s.* 10*d.*; Grand Stand Men, 73*l.* 15*s.* 8*d.*; Turnstile Men, 48*l.* 15*s.* 8*d.*; Bank Clerks, 41*l.* 17*s.* 3*d.* Refreshments, 12*l.* 2*s.*	201	1	5			
56	*Awards Office* :—Clerks, 26*l.* 1*s.* 2*d.*; Messengers 13*l.* 7*s.* 6*d.*	39	8	8			
1,118					1,109	12	4
	General Management :—						
160	Foreman and Assistant Foremen	179	15	3			
182	Yardmen	98	13	9			
238	Door and Gate Keepers	185	17	0			
89	*Garage* :—Superintendent and Assistants	102	13	5			
139	*Veterinary Department*. Veterinary Inspectors	128	0	11			
143	*Engineering Department* :—Consulting Engineer and Assistant, 66*l.* 9*s.* 8*d.*; House, Maintenance and Travelling Expenses, 56*l.* 3*s.* 7*d.*	122	13	3			
1,230	*Police, &c.* :—Metropolitan Police, 964*l.* 17*s.*; Commissionaires, 17*l.* 15*s.*	982	12	0			
2,181					1,800	5	7
893	*Dairy* :—Staff, 325*l.* 0*s.* 1*d.*; Milk, 189*l.* 8*s.*; Ice, 21*l.*; Utensils, 190*l.* 8*s.* 2*d.*; Salt, 1*l.* 15*s.*; Engine, 25*l.* 10*s.* 6*d.*; Butter Tests, 20*l.* 18*s.* 1*d.*; Carriage, 5*l.* 1*s.*; Lodgings, 32*l.* 10*s.*; Butter and Cheese Boxes, 8*l.* 1*s.* 9*d.*; Milk Analysis, 9*l.*.; Purchase of Cheese 2*l.* 12*s.* 3*d.* Refreshments, 44*l.* 5*s.* 9*d.*; Fuel, 5*l.* 7*s.* 6*d.*; Miscellaneous, 30*l.* 3*s.* 5*d.*;	920	1	6			
8	Analysis of Cider	10	0	0			
185	*Poultry* :—Penning and Feeding, 94*l.*; Labour, 6*l.*; Carriage, 21*l.* 6*s.*; Miscellaneous, 4*l.* 17*s.* 6*d.*	126	3	6			
32	*Rabbits* :—Penning and Feeding 24*l.* 10*s.*; Carriage 4*l.* 18*s.* 6*d.*	29	8	6			
1,118					1,085	18	6
599	*Horticultural Show* :—Hire of Tents, 558*l.* 19*s.* 10*d.*; Judges, 30*l.* 6*s.* 7*d.*; Wages, 64*l.* 11*s.*; Medals, 56*l.* 13*s.*; Printing, 7*l.* 12*s.* 6*d.*; Hire of Turnstiles, 5*l.* 5*s.*; Carriage and Cartage, 18*l.* 18*s.* 8*d.*; Labour, 27*l.* 7*s.* 8*d.*. (For Admissions see Miscellaneous Receipts.)				769	14	8
50	Plantation Competition				50	18	10
—	Orchard and Fruit Plantation Competition				28	7	0
	GENERAL SHOWYARD EXPENSES :—						
46	Telephone Extension	12	19	11			
—	Telegraph Extension	30	3	0			
—	Hire of Furniture	203	0	2			
—	Hire of Chairs	79	15	6			
49	Official Luncheons	52	10	0			
50	St. John Ambulance	69	5	5			
44	*Lino and Towels*		—				
63	Maps and Plans of Yard	39	7	6			
19	Medals	17	4	0			
89	Education and Forestry	54	19	11			
31	Gas	13	2	9			
23	Banner	10	18	6			
74	Sleepers	53	6	0			
12	Billposting in Showyard	10	0	0			
14	Hire of Pony and Trap	6	5	0			
31	Hire of Bath Chairs	18	11	10			
13	Tan	9	16	6			
11	Carriage	17	16	7			
45	Engraving Cups	27	11	9			
16	Hire of Weighbridge	3	16	5			
—	Repairs to Lorry	34	18	9			
18	Hire of Tents	13	4	0			
8	*Hire of Tubs*		—				
41	Miscellaneous	47	15	4			
6	*Hire of Safes*		—				
—	Outstanding accounts from Derby Show	30	1	7			
					856	4	5
703							
					55,618	19	2
57,055							
9,621	Credit Balance				57	8	11
£66,676					£55,676	8	1

	£	s.	d.
Actual surplus on the Cambridge Show	£57	8	11
Add—Contribution from the Ordinary Account to Show Fund	3,500	0	0
	£3,557	8	11

Receipts.

Figures for 1921. £		£	s.	d.	£	s.	d.	£	s.	d.
	CASH AT BANKERS AND IN HAND AT JANUARY 1, 1922 :—									
323	Reserve Fund				506	0	0			
—	Current Account				3,464	14	4			
11	Cash in Hand				70	6	8	4,041	1	0
334										
	ANNUAL SUBSCRIPTIONS :—									
1,365	*Governors* for 1922	1,424	5	0						
9,719	*Members'* Subscriptions for 1922	10,114	3	6						
132	Subscriptions for 1922 (additional)	154	4	0						
43	Subscriptions for previous years	59	5	0						
	LIFE GOVERNORS AND MEMBERS :—									
51	Annual Contributions	46	16	0						
11,310					11,798	13	6			
	MISCELLANEOUS :—									
3,532	Income from Investments	3,294	16	9						
328	Interest on Daily Balances	125	15	9						
1,821	Income Tax repaid	1,209	12	2						
83	Sales of Pamphlets, Farm Account Books &c.	102	15	4						
6	Sales of Library Catalogues	3	9	3						
105	Sales of Text Books	318	13	11						
184	*Tractor Report*									
19	Sales of Journals	127	16	9						
—	Advertisements in Journal	275	1	7						
—	Sundries	21	7	0	5,479	8	6			
6,078										
17,388	Total of Ordinary Receipts							17,278	2	0
	LIFE COMPOSITIONS :—									
1,613	Governors and Members							1,327	0	0
—	Legacy							160	0	0
74	Donations to Society's Funds							51	1	0
—	Net proceeds of sale at Woburn Farm							914	11	2
81	Subscriptions for 1923							86	11	0
2,296	Cash received for debts due at Dec. 31, 1921							398	10	1
	Miscellaneous							0	16	7
								24,257	12	10
	Sale of £71,942 13*s*. 3*d*. 5 per cent. War Stock (1929–1947)							71,042	8	0
	Rent, 12 Hanover Square	231	0	0						
	Less Rent paid	231	0	0						
£21,786								£95,300	0	10

T. B. TURNER, *Secretary.*

DELOITTE, PLENDER, GRIFFITHS & Co., *Accountants.*

Payments.

Figures for 1921. £		£ s. d.	£ s. d.	£ s. d.
1,371	*Due to Bank*			
	GENERAL ADMINISTRATION :—			
2,771	Salaries of Official Staff (including clerical assistance)	2,848 19 6		
382	Pensions to Officials	418 4 2		
144	Legal Charges and Auditors' Fees	94 6 0		
984	Rent, Rates, Taxes, Insurance and House Expenses	966 13 0		
22	Purchase of Books	5 17 4		
1,133	Printing and Stationery	752 10 2		
338	Postage and Telegrams	382 8 7		
93	Carriage of Parcels and Travelling Expenses	43 16 5		
151	Advertising and Miscellaneous Office Expenses	156 17 7		
6,018			5,669 12 9	
	JOURNAL OF THE SOCIETY :—			
	Balance cost of Volume 82 :—			
	Printing and Binding	1,050 18 10		
	Postage	344 10 7		
	Editing and Literary Contributions	270 12 0		
651	Illustrations	17 16 3		
			1,683 17 8	
196	On account of printing Volume 83		5 2 6	
285	*Tractor Report*			
14	Printing Farm Account Books		87 10 0	
3	Printing Pamphlets		104 10 0	
	LABORATORY :—			
723	Salary and Petty Cash		423 5 9	
	OTHER SCIENTIFIC DEPARTMENTS :—			
250	Botanist's Salary	250 0 0		
200	Zoologist's Salary	200 0 0		
100	Consulting Engineer	100 0 0		
200	Grant to Royal Veterinary College	200 0 0		
100	Grant to Research Institute, Reading	100 0 0		
3	Medals for Proficiency in Cattle Pathology	3 3 0		
853			853 3 0	
	NATIONAL DIPLOMA IN AGRICULTURE :—			
356	Honoraria and Expenses of Examiners	442 15 6		
138	Travelling Expenses of Officials	109 1 9		
111	Hotel Expenses of Examiners and Officials	126 16 5		
75	Printing, Stationery and Postage	138 2 0		
13	Writing Diplomas	23 16 3		
75	Salary for Assistant	75 0 0		
768		915 11 11		
652	*Less* Entry Fees and Sales of Examination Papers	894 10 1		
116		21 1 10		
58	*Less* Highland and Agricultural Society's Moiety	10 10 11		
58			10 10 11	
	NATIONAL DIPLOMA IN DAIRYING :—			
82	Hire of Premises, &c.	66 16 4		
91	Fees to Examiners	78 17 2		
42	Hotel and Travelling Expenses	39 8 0		
23	Printing and Postage	6 12 9		
238		191 14 3		
118	*Less* Entry Fees and Sales of Examination Papers	180 7 2		
120			11 7 1	
	EXTRA EXPENDITURE :—			
	Grant to Research Fund	2,000 0 0		
1,245	Library : Binding and Purchase of Books	92 4 6		
			2,092 4 6	
	Amount set aside towards loss on Shows		3,500 0 0	
10,166	Total of Ordinary Payments			14,441 4 2
	Purchase of £94,857. 8*s*. Conversion Loan 3½ per cent.			73,462 14 9
	Purchase of £3,909. 16*s*. Local Loan 3 per cent.			2,500 0 0
	Purchase of Marble Pedestal			16 0 0
	Payment to Willesden District Council			588 12 1
6,208	Payments to Creditors			1,103 11 0
	BALANCES AT BANK AND IN HAND :—			
	Reserve Fund		442 2 2	
	Current Account		2,643 9 11	
	Cash in Hand		102 6 9	
4,041				3,187 18 10
£21,786				£95,300 0 10

Examined, audited and found correct, this 28th day of February, 1923.

JONAS M. WEBB,
H. J. GREENWOOD,
NEWELL P. SQUAREY,
} *Auditors on behalf of the Society*

Dr.

Balance Sheet,

Figures for 1921.		£	s.	d.	£	s.	d.	£	s.
£	To SUNDRY CREDITORS—								
1,400	Sundry Creditors				302	13	10		
80	Subscriptions received in 1922, but belonging to 1923				86	11	0		
								389	4
1,480									
1,500	To Amount placed on deposit for renewal of Show Timber							3,000	0
	To CAPITAL—								
59,993	As at December 31, 1921				83,060	8	0		
	Add Show Fund—								
2,500	Contribution from Ordinary Account	3,500	0	0					
9,621	Profit on Cambridge Show	57	8	11					
12,121					3,557	8	11		
2 000									
10,121									
—	Profit on sale of War Stock 5 per cent.				4,675	5	11		
—	Net proceeds of sale at Woburn Farm . . .				914	11	2		
1,613	Life Compositions received in 1922 . . .				1,327	0	0		
—	Legacy				160	0	0		
74	Donations towards the Society's Funds . . .				51	1	0		
177	Subscriptions for 1922 received in 1921 . . .				80	7	0		
4,723	Excess of ordinary receipts over payments for the year 1922				2,836	17	10		
83,412					96,662	19	10		
27	*Less* Sundry debts unrecoverable				212	7	0		
83,385					96,450	12	10		
	DEPRECIATIONS written off, viz. :—								
—	Investments	1,192	7	3					
15	Fixtures	14	3	4					
53	Furniture	48	1	1					
9	Machinery	8	9	3					
78	Show Plant	132	19	9					
69	*Buildings at Woburn*								
100	Lease of 16 Bedford Square	100	0	0	1,496	0	8		
324								94,954	12
83,061									
£86,041								£98,343	17

T. B. TURNER, *Secretary.*

DELOITTE, PLENDER, GRIFFITHS & Co., *Accountants.*

SOCIETY OF ENGLAND.

DECEMBER 31, 1922. *Cr.*

Figures for 1921. £			£ s. d.	£ s. d.
	By RESERVE FUND—			
66,367 War Stock)	94,857*l.* 8*s.* Conversion Loan 3½ per cent. (1961) @ 75⅛*			71,261 12 5
387	500*l.* War Saving Certificates @ cost			387 10 0
—	3,909*l.* 16*s.* Local Loans 3 per cent. (1912) @ 64* . .			2,502 5 5
1,946	2,840*l.* 13*s.* 6*d.* Metropolitan 3 per cent. Consolidated Stock (1941) @ 77½*			2,201 10 6
5,027	6,528*l.* 1*s.* 6*d.* Canadian 4 per cent. Stock (1940–1960) @ 88½*			5,777 6 11
	* Market value at 30 Dec., 1922.			
	By LEASE OF 16 BEDFORD SQUARE		1,500 0 0	
1,500	*Less* Amount written off		100 0 0	
				1,400 0 0
	By FIXTURES—			
	Value at December 31, 1921		188 18 7	
189	*Less* Depreciation at 7½ per cent.		14 3 4	
				174 15 3
	By FURNITURE—			
	Value at December 31, 1921		480 11 4	
	Less Depreciation at 10 per cent.		48 1 1	
			432 10 3	
480	Added during 1922		16 0 0	
				448 10 3
1,571	By PICTURES (500*l.*) and BOOKS (1,071*l.* 4*s.* 10*d.*) .			1,571 4 10
	By MACHINERY—			
	Value at December 31, 1921		84 13 1	
85	*Less* Depreciation at 10 per cent.		8 9 3	
				76 3 10
	By SHOW PLANT—			
	Value at December 31, 1921		1,329 17 7	
1,330	*Less* Depreciation at 10 per cent.		132 19 9	
				1,196 17 10
	By EXPENDITURE ON FORTHCOMING SHOW AT NEWCASTLE			3,386 18 1
736	By SUNDRY DEBTORS			613 6 11
	By CASH AT BANKERS AND IN HAND—			
	ORDINARY ACCOUNT—			
506	Reserve Fund		442 2 2	
3,465	Current Account		2,643 9 11	
70	Cash in Hand		102 6 9	
4,041			3,187 18 10	
	SHOW ACCOUNT—			
1,500	On Deposit	3,000 0 0		
882	Current Account	1,157 15 11		
			4,157 15 11	
2,382				7,345 14 9
£86,041				£98,343 17 0

Examined, audited, and found correct, this 28th day of February, 1923.

JONAS M. WEBB, H. J. GREENWOOD, NEWELL P. SQUAREY,	*Auditors on behalf of the Society.*

Royal Agricultural Society of England.

RESEARCH COMMITTEE.

*EXPERIMENTS IN CONNECTION WITH THE PROFITABLE UTILISATION OF WHEY.

RECEIPTS AND PAYMENTS FOR YEAR 1922.

1922	RECEIPTS.	£	s.	d.	1922	PAYMENTS.	£	s.	d.	£	s.	d.
Apr.	To Grant	2,000	0	0		By Expenses incurred in connection with New Factory Apparatus	248	14	3			
						Less Sales	102	14	0	146	0	3
						„ Salaries, Wages, etc.				297	18	4
						„ Chemicals, Fuel, etc.				71	11	3
						„ Analysis Fees, Patent Fees, Insurance and Sundry Expenses				59	1	0
						„ Purchase of Whey				44	9	4
						„ Purchase of Vacuum Pan and Pump				205	17	6
						„ Purchase of Turbine Whey Separator				85	10	0
						„ Depreciation of Plant				89	12	4
						„ Miscellaneous Expenses				7	2	0
						„ Balance				992	18	0
		£2,000	0	0						£2,000	0	0

Examined, audited, and found correct, this 28th day of February, 1923.

T. B. TURNER, *Secretary.*

DELOITTE, PLENDER, GRIFFITHS & Co. *Accountants.*

JONAS M. WEBB,
H. J. GREENWOOD,
NEWELL P. SQUAREY
} *Auditors on behalf of the Society.*

Royal Agricultural Society of England.

STATEMENT OF FUNDS HELD BY THE SOCIETY IN TRUST OR WHICH ARE NOT CONSIDERED AVAILABLE FOR GENERAL PURPOSES, DECEMBER 31, 1922.

			£ s. d.			£ s. d.
To Hills' Bequest for Pot-culture Experiments			9,000 0 0	By 5,560*l.* 17*s.* 8*d.* 5% War Stock (1929–1947) received under the conversion rights for 5,282*l.* 17*s.* 6*d.* 4½% War Stock		5,282 17 6
Less: Depreciation of Consols at time of conversion		£ s. d. 3,582 7 11		(*Value on December* 31, 1922, at 100 = 5,560*l.* 17*s.* 8*d.*)		
„ Cost of conversion		134 14 7	3,717 2 6			
			5,282 17 6			5,282 17 6
To Fund provided by the late Sir Walter Gilbey for Endowment of Lectureship at Cambridge when after a certain date any balance on this account will become the property of the Society			1,190 16 5	By 1,140*l.* Metropolitan Water A Stock at cost		998 1 0
				(*Value on December* 31, 1922, at 63 = 718*l.* 4*s.* 0*d.*)		
				By amount included in the Society's Sundry Creditors' Account:—	£ s. d.	
				Fund uninvested	1 19 0	
				Accumulated income	190 16 5	192 15 5
			£1,190 16 5			£1,190 16 5
To Superannuation and Insurance Fund:—				By Investments in names of Trustees of Superannuation and Insurance Funds, viz.:—		
Amount set aside in accordance with declaration of Trust of July 26, 1911		£ s. d. 9,171 5 0		8,817*l.* 7*s.* 1*d.* 5% War Stock (1929–1947) at cost		8,244 3 8
Less: Depreciation of Consols at time of conversion	£ s. d. 1,837 18 4			(*Value on December* 31, 1922, at 100 = 8,817*l.* 7*s.* 1*d.*)		
„ Cost of conversion	256 3 0	2,094 1 4	7,077 3 8	443*l.* 3*s.* 11*d.* West Australian 3½% Stock (1935–1955) at cost		359 17 4
Add: Purchase of 1,367*l.* 14*s.* 9*d.* 5% War Loan at cost			1,167 0 0	(*Value on December* 31, 1922, at 74¾ = 331*l.* 5*s.* 10*d.*)		
			8,244 3 8	235*l.* 18*s.* 6*d.* Queensland 3½% Stock (1950–1970) at cost		185 10 4
Income Tax payable on War Stock			242 9 7	(*Value on December* 31, 1922, at 72 = 169*l.* 17*s.* 4*d.*)		
Accumulation to December 31, 1922			849 0 8	Cash at Bank		546 2 7
			£9,335 13 11			£9,335 13 11

Examined, audited, and found correct, this 28th day of February, 1923.

T. B. TURNER, *Secretary.*
DELOITTE, PLENDER, GRIFFITHS & Co., *Accountants.*

JONAS M. WEBB,
H. J. GREENWOOD,
NEWELL P. SQUAREY, } *Auditors on behalf of the Society.*

[Copies of the full Report of any of the Council Meetings held during the year 1922 may be obtained on application to the Secretary, at 16 Bedford Square, London, W.C.1.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

◆

Minutes of the Council.

WEDNESDAY, FEBRUARY 1, 1922.

H.R.H. THE DUKE OF YORK, K.G. (President), in the Chair.

Five Governors and 80 Members were admitted into the Society.

The Report of the FINANCE Committee was received and adopted. Mr. ADEANE, in presenting this report, referred to the Society's investments, which included a sum invested in 5 per cent. War Loan, which matured between 1929–47 at the option of the Government. If the Government could borrow at a cheaper rate in 1929 the probability was that they would pay off the loan, and it was therefore for the Society to consider whether or not it would be advisable to invest in some loan of longer date. The Committee asked that the matter be left to a small Committee, consisting of the Duke of Devonshire, Mr. Mathews and himself, to seek expert advice and take action if necessary.

The Sub-Committee (Lord Strachie, Sir Arthur Hazlerigg, Bart., and Mr. Henry Overman) appointed by the Council to consider the salary to be paid to Dr. J. Augustus Voelcker, in consequence of the relinquishing of the Woburn Experimental Farm by the Society, reported that they had unanimously agreed to recommend that the sum of £400 per annum should be paid to Dr. Voelcker as Consulting Chemist in future.

A Report was received and adopted from the CHEMICAL Committee. This stated that, after considering the Sub-Committee's report, the Committee had expressed the hope that Dr. Voelcker would not relinquish the position he had occupied for so many years. Upon this being passed unanimously, Dr. Voelcker had expressed his readiness to abide by the wishes of the Committee, and to accept the Sub-Committee's recommendation. The Chemical Committee's Report also included a recommendation that a Sub-Committee consisting of Dr. Somerville, Mr. Dampier Whetham and Dr. Voelcker be appointed to consider in what way the scientific side of the Society might be developed.

Mr. LUDDINGTON, in presenting this report, called attention to the omission from the *Journal* of the statement of Members' privileges. Possibly the information could be given in an abridged form, and he suggested that the matter be referred back to the Journal Committee for re-consideration. On behalf of the Journal Committee, Mr. MATHEWS said he thought they would be willing to entertain that.

Dr. VOELCKER expressed to the Council his thanks for the resolution that had been passed, and his pleasure to know that his long association with the Society was not to be broken.

A Report was presented from the BOTANICAL AND ZOOLOGICAL Committee, embodying certain proposals regarding a Fruit and Orchard Competition to be held in connection with the Cambridge Show in conjunction with the Royal Horticultural Society. After some discussion, in which Mr. COLTMAN-ROGERS, Sir DOUGLAS NEWTON, Mr. DAVIS BROWN and Col. WHEELER took part, the Report of the BOTANICAL AND ZOOLOGICAL Committee was received and adopted.

The Report of the VETERINARY Committee was received and adopted. In presenting this Report, the EARL OF NORTHBROOK stated that the position with regard to Sheep Scab was even more unsatisfactory than it was a month ago, and the Committee had come to the conclusion that the failure of the Ministry of Agriculture to deal effectively with the disease was due to the fact that the legislative powers possessed by that department were insufficient for the purpose. The Committee thought the best step they could take would be to have a conference with the National Sheep Breeders' Association. They had accordingly asked that body to send representatives to the next meeting of the Veterinary Committee. In that way they hoped they might be able to agree upon some suggestions which could be made to the Ministry with the view of strengthening their action. After the conference with the members of the Association, it was proposed to ask the Minister of Agriculture to receive a deputation.

Mr. MIDDLETON said there was one matter to which Lord Northbrook had not alluded, and that was the present very alarming spread of foot-and-mouth disease. The information contained in the report of the Veterinary Committee was, he was sorry to say, far from up to date now, for there had been a number of fresh cases within the last twenty-four hours. He understood that a campaign was being engineered in the Press against compulsory slaughter, and he thought it advisable that they should pass a resolution that day, as, in his opinion, the Minister of Agriculture would need all the backing that he could get. For that reason, everything possible should be done to strengthen his hands. Of course, it was possible that the present outbreaks might assume such dimensions that it would be necessary to abandon the slaughtering policy ; but they had not come to that yet. He therefore moved :—

> "That this Council reaffirms its approval of the policy of slaughter in connection with foot-and-mouth disease, and hopes there will be no departure from it."

Lord BLEDISLOE supported Mr. Middleton. His lordship said he had been given to understand that the present outbreaks of foot-and-mouth disease were on a larger scale than had occurred since 1894, when the Diseases of Animals Act was passed. If that were so, it would involve a big expenditure of public money, and it would be necessary to put all possible pressure on the Government to see that the hitherto successful policy should be continued in the best interests of the stockowners of the country and in order to safeguard the milk supply.

Mr. FALCONER was surprised that nothing had been said by Lord Northbrook regarding foot-and-mouth disease. They had come to a very serious state of affairs, which would involve the country in a heavy expenditure, and would mean the devastation of many districts of cattle. It would put the country in a very unfortunate position. How were these cattle slaughtered in connection with outbreaks of foot-and-mouth disease to be replaced ? He pleaded for the removal of the embargo against the introduction of Canadian store cattle.

Mr. MANSELL supported the policy of slaughter in connection with foot-and-mouth disease, for it would save money in the long run.

With regard to sheep scab, the outbreaks of which for the past year were 223 per cent. above the figures for 1914, he could tell them that Sir Stewart Stockman, in a lecture at Shrewsbury on Saturday last, had stated that he did not think they would get rid of sheep scab until the onus of stamping it out was placed on the owners. When men who bought sheep suffering from scab and spread them about the country were brought before a magistrate, and let off on payment of costs, it was quite clear that they would never get rid of the disease unless more drastic measures were adopted.

Mr. REA emphasised what had been said as to the unsatisfactory conditions with regard to sheep scab. He had wondered for some time why the Order relating to compulsory dipping had been withdrawn by the Ministry of Agriculture. It was, in his opinion, a retrograde step, and he ventured to suggest that representations be made to the Minister of Agriculture that the Orders should be reimposed.

Lord NORTHBROOK said the reason why he had made no mention of foot-and-mouth disease was not because he wished to minimise the gravity of the situation. He had no information except what was available from the public Press; therefore he could not give the Council any facts not already in their possession. He rather took it for granted that there was not a single member of the Council who failed to realise the importance of the alarming number of outbreaks which had spread greatly since the Committee met. On the previous day he had not heard, nor had other members of the Committee heard, that there was a campaign in the Press, as Mr. Middleton had stated, to stop compulsory slaughter. Personally, he could only say—and he was sure he carried with him the whole of the Veterinary Committee—that he most heartily supported the resolution proposed by Mr. Middleton, and they were, as he was, convinced that slaughter was the only effective means of stamping out the disease. Regarding what had been said by Mr. Rea, his Lordship explained that, although the Ministry had discontinued compulsory dipping, local authorities had the power to make orders for their own areas. Whether it was better for the Ministry to make regulations to apply to the whole of the country, or whether they should allow each local authority to deal with their own area, was a matter that might be considered at the conference between the Veterinary Committee and representatives of the National Sheep Breeders' Association.

Mr. DAVIS BROWN called attention to references in the London Press to outbreaks of foot-and-mouth disease under the heading of "Cattle Plague," which was causing a wrong impression abroad. He suggested that the attention of the Ministry of Agriculture should be drawn to the matter, and that the Council should point out the harm the papers were doing. Lord BLEDISLOE said that only yesterday the Central Chamber of Agriculture took the opportunity of appealing to the Press representatives present at their meeting to correct that impression. The Farmers' Club, also, had made a similar appeal to the newspapers.

The report of the VETERINARY Committee was then adopted, and Mr. Middleton's proposal was also passed as a rider to that report.

Col. STANYFORTH, in presenting the Report of the IMPLEMENT Committee, said that it dealt with item number 15 on the agenda, which was the consideration of suggestions made by Mr. Parmiter at the annual general meeting regarding the encouragement of inventions of agricultural machinery. He thought the Council would agree that as the Ministry of Agriculture had now set up an Advisory Committee for the testing of agricultural machinery, the matter was receiving the consideration it deserved.

Sir DOUGLAS NEWTON wished, in view of the great importance of this question, to urge the desirability of an application being made to the Ministry for a portion of the £850,000 grant no win process of allocation. Some reference was, he believed, made to this matter by the Implement Committee, but if the report did not contain a recommendation on the subject he hoped the Chairman might be prepared to accept a motion to the effect that application be made to the Ministry for sympathetic consideration, and that some portion of the grant be definitely earmarked for the development of agricultural machinery.

Mr. FALCONER said the time had come, in the opinion of many arable farmers, when more attention should be devoted to the economical working of the land. The arable farmer was up against a stiff proposition, as they knew. They had heard of the large amounts allocated in prizes for stock, goats and rabbits, but they did not hear much of any allocation for the encouragement of the economical working of the land. He thought it was up to that Society to keep the land of England in cultivation, and that could only be done by the provision of labour-saving appliances. He was glad that a committee had been set up by the Ministry of Agriculture for the testing of agricultural machinery.

The SECRETARY read a letter from the Home Office stating that the Secretary of State had had the honour to lay before H.M. the King the loyal and dutiful address of the members of the Royal Agricultural Society of England on the occasion of the betrothal of H.R.H. the Princess Mary. Their Majesties had been pleased to receive the address very graciously.

A letter was also read from his Grace the Duke of Bedford expressing his thanks for the resolution passed by the Council at their last meeting.

In view of the fact that the wedding of H.R.H. the Princess Mary would take place on Tuesday, February 28, the date that had been fixed for the next meetings of the Committees, it was decided, on the motion of Col. STANYFORTH, seconded by the Hon. CECIL T. PARKER, that these meetings be postponed for a week. The Committees would therefore meet on Tuesday, March 7.

WEDNESDAY, MARCH 8, 1922.

H.R.H. The DUKE OF YORK, K.G. (President), in the Chair.

Five Governors and 116 Members were admitted into the Society.

The Report of the FINANCE Committee was received and adopted, together with the Accounts for 1921 and the Estimates for the ensuing year, as to which an explanatory statement was made by the Chairman of the Committee. Mr. ADEANE also stated that it was desirable that the Society should continue to do all it could for science within its means, as it always had done in the past. The difficulty from the financial point of view was that they seemed to be sometimes up and sometimes down, and there was the danger that if in times of prosperity they placed permanent burdens on their finances, they might not in bad times be able to maintain them. This year undoubtedly they could make a substantial contribution to the scientific side, and they suggested that the sum of £2,000 should be placed to a Research Fund, and that the Council add to the fund from time to time as far as their finances would permit. If this met with the approval of the Council, it would be necessary to set up a Research Committee to recommend to the Council in what manner they thought this money should be expended, and also to administer the fund. He understood that proposals to this effect were contained in the Report of the Committee which was set up to consider in what way the scientific side of the Society might be developed.

The Report of the CHEMICAL Committee was received and adopted. It included the report of the Sub-Committee appointed to consider in what way the scientific side of the Society might be developed.

The following paragraphs summarise the Sub-Committee's proposals :—

(*a*) That the results of the past experimental work of the Society should be collated, abstracted and published.

(*b*) That the Society should continue to devote part of its scientific energies to agricultural research, and should at once establish a separate fund for its support.

(*c*) That members of the Society be invited to make suggestions as regards practical problems which they consider require experimental investigation.

(*d*) That members of the Society be invited to co-operate, by the provision of land, stock, etc., in the carrying out of such work.

(*e*) That scientific institutions, as occasion arises, be asked to aid the

Society in the elucidation of problems that cannot be dealt with on an ordinary farm.

(*f*) That a Research Committee of eight members be set up to review proposals and to initiate and supervise experiments.

(*g*) That the Research Committee should submit to the Council in November estimates for the forthcoming year's work, and in March a report on and the audited accounts for the work of the past year.

(*h*) That arrangements be made at once for the publication of past experimental results (section 1 of Report), and that experiments be initiated as soon as possible, as indicated in section 4 of Report.

The Report of the BOTANICAL AND ZOOLOGICAL Committee was presented. On the proposition of Mr. ADEANE, it was decided to refer to the Research Committee the question of the date of the suggested lecture on the "Warble Fly" by Mr. Warburton. With this amendment, the report of the Committee was adopted.

Colonel STANYFORTH, in moving the adoption of the IMPLEMENT Committee's Report, said it would be remembered that at the last meeting Sir Douglas Newton had urged the desirability of an application being made to the Ministry of Agriculture for some portion of the £850,000 grant now in process of allocation, to be devoted to the development of agricultural machinery. The Implement Committee felt that the Council would imagine them lacking in their duty if they did not apply for a portion of this grant, having regard to the fact that the Society had the organisation, the knowledge and the experience necessary in carrying out this particular work.

On the recommendation of the COMMITTEE OF SELECTION, the RESEARCH Committee was constituted as follows: The Duke of Devonshire, Mr. C. Dampier Whetham, Prof. W. Somerville, Mr. Henry Overman, Mr. John Evens, Lord Bledisloe, the Chairman of the Chemical Committee, and the Chairman of the Botanical Committee.

Mr. ADEANE formally moved :—

> "That Mr. Arthur Edwin Clarke, a member of the firm of Messrs. Garrard, Wolfe, Gaze & Clarke, of 13 Suffolk Street, Pall Mall East, S.W.1, Solicitors for the Society, be and he is hereby authorised to make an affidavit in the terms of the draft submitted to the Council to prove the Society's claim in the liquidation of the Park Royal Estates Limited."

Mr. CLARKE having given an explanation of the position in regard to which the resolution was required, the proposition was unanimously adopted.

WEDNESDAY, APRIL 5, 1922.

H.R.H. The DUKE OF YORK, K.G. (President), in the Chair.

The PRESIDENT said that he regretted to have to announce, before proceeding with the ordinary business of the meeting, the deaths of Mr. John Rowell and Mr. D. T. Alexander, two members of the Council who had taken a very active part in the affairs of the Society. Mr. Rowell had acted as Steward of Heavy Horses since 1906, and was most popular with exhibitors and with every one connected with the Royal Show. Mr. Alexander had been of great help to the Society when the Show visited Cardiff, and had done an immense amount of work in connection with the Local Committee.

On the motion of HIS ROYAL HIGHNESS, a resolution of condolence with the relatives of the deceased gentlemen was adopted, the members rising in their places.

Five Governors and 114 Members were admitted into the Society.

The Hon. CECIL T. PARKER moved the adoption of the Report of the VETERINARY Committee, and made a statement containing the latest information from the Ministry of Agriculture regarding the outbreaks of foot-and-mouth disease.

Lord AILWYN inquired whether the Veterinary Committee had considered the new attitude of the Government regarding the embargo on imported cattle, which was a distinct departure from their announcement of a little over a month ago. He noticed that the Central Chamber had decided to send a deputation to the Prime Minister, and he urged that the Society should associate itself with anything done in that direction.

Lord BLEDISLOE said he was about to mention the same subject. The whole question had been reopened by the decision of the Government to leave to the House of Commons an uncontrolled vote on the embargo. The question was to be discussed, but the Government Whips were not to be put on, in spite of the fact that it had recently been announced that the Government had no intention of removing the embargo. They were aware that the House of Commons represented in a preponderating degree the urban population, and the urban population had been greatly misled on this subject, so that there was a real danger of the House of Commons deciding by a majority that the embargo which had existed for something like a quarter of a century should be removed. Rather fortunately it might be, there still existed the institution known as the House of Lords, because it would be necessary for a Bill to be introduced repealing the Diseases of Animals Act of 1896, which would require the assent of both Houses. It would not be unfair to say that in its agricultural policy, as in other matters, the Government did not adopt a very stable attitude. He certainly thought that all bodies of organized agriculturists should join in sending a deputation to the Prime Minister, or to the Cabinet in his possible absence, expressing with no uncertain voice their views on this matter.

Mr. CHRISTOPHER MIDDLETON urged the Council to take immediate action in order to express the strong feelings of agriculturists resulting from the sudden change of policy on the part of the Government. Such rapid changes on important questions of policy as this were most alarming, and agriculturists in consequence had not the faintest idea where they stood.

The Hon. CECIL PARKER said the matter had been mentioned at the meeting of the Veterinary Committee, but in the absence of any communication from outside no steps had been taken, and it would be for the Council to decide what course should be adopted.

Lord AILWYN said, that being the case, he would propose :—

> "That a deputation be appointed to interview the Prime Minister, or, in his absence the head of the Government for the time being, with regard to the question of the maintenance of the embargo on imported cattle, and that the deputation consist of Lord Bledisloe, Sir Merrik Burrell, Sir Gilbert Greenall, Mr. Mansell, Colonel Cornwallis, Colonel Courthope, M.P., Major David Davies, M.P., and Mr. Henry Overman."

At the general wish of the Council the name of Lord Ailwyn was added to the list of representatives and the resolution in this form was seconded by Mr. MIDDLETON, who said it was essential that the chief agricultural body should take the initiative in the matter.

Mr. ADEANE said that he was entirely in opposition to the introduction of these cattle, but at the same time he felt it was only right to point out the need for regard to the Charter of the Society. It might be best to scrap the Charter, for at times it was a great nuisance, but he felt that he must bring to the notice of the Council that part of the Charter which said that "a principle of its (the Society's) constitution shall be the total exclusion of all questions at its meetings, or in its proceedings, of a political tendency, or having reference to measures pending or to be brought forward in either of our Houses of Parliament, which no resolution, by-law, or other enactment of the said body politic or corporate, shall on any account or pretence whatever be at any time allowed to infringe." He understood that was why at the commencement of this movement they handed the question over to a very capable committee, of which Lord Crewe was the Chairman and Sir Gilbert Greenall was Vice-Chairman.

Lord Ailwyn was of the opinion that the question was no more political in character now than it had been when they had previously taken action.

The Duke of Devonshire said that he was not in an easy position in regard to this matter, and must reserve to himself freedom of action when the question arose either there or elsewhere.

Mr. Mansell expressed the opinion that this was not a question of politics at all, and that the Council ought to be free to speak on a matter which was of such great agricultural importance.

The resolution was carried, and the Report of the Veterinary Committee was received and adopted.

In presenting the Report of the Implement Committee, Colonel Stanyforth expressed the view that the reply of the Ministry of Agriculture, so far as it related to the presentation of a definite scheme of trials, was satisfactory. Any suggestions that members of the Council cared to make would be considered by the Implement Committee at the next meeting.

Lord Bledisloe emphasised the need for immediate action by the Council in view of the fact that the money at the disposal of the Ministry of Agriculture was being very rapidly allotted. At the last meeting of the Agricultural Advisory Committee Mr. Overman and himself had taken upon themselves the making of a formal application on behalf of the Society, but it was quite evident that any grant which might be made would be conditional on the money being applied to some specific purpose. The scheme for setting up farm institutes seemed to have crumbled, and it was just possible that as a result more money might be available for implement trials than was thought likely a month ago.

The Duke of Devonshire, in presenting the Research Committee's Report, said the Council would have heard with gratification of the very generous offer made by Mr. Dampier Whetham to enable the experiments to be made in connection with the utilisation of whey. They would also be gratified to learn that the policy adopted at the last meeting had led to a considerable development, and if they had the assistance of as many good friends as had come forward already they would be able to give extremely good value for the money granted by the Society for research purposes. It was interesting work, but, of course, as yet the Committee had hardly got into their stride. He felt, however, that in time the step taken by the Society would be found to have been fully justified. The Committee felt much indebted to Lord Bledisloe and Mr. Whetham for the assistance they had given.

Mr. Thornton inquired whether the Research Committee had considered the desirability of research into animal diseases. He suggested that if the problem, for example, of Johne's Disease could be solved, it would be one of the most valuable things achieved for the benefit of agriculture. The Duke of Devonshire said the Committee had only held its second meeting on the previous day, and they had not as yet had time to deal with the whole field of research, but to show that they did not overlook the importance of research in this direction he mentioned that they had added a representative of the Veterinary Committee to the Research Committee and that aspect of research would be borne in mind.

On the proposal of the President, it was resolved :—

> **"That the Seal of the Society be affixed to the Minute recording the resolution passed on March 8th, 1922, authorising Mr. Arthur Edwin Clarke of the firm of Messrs. Garrard Wolfe, Gaze & Clarke, Solicitors for the Society, to make the Affidavit then submitted in draft proving the Society's claim in the liquidation of the Park Royal Estates Limited in confirmation of the same."**

WEDNESDAY, MAY 3, 1922.

Mr. R. M. Greaves (Vice-President) in the Chair.

Ten new Governors and 169 new Members were admitted into the Society.

The Report of the Finance Committee was received and adopted. In presenting this report Mr. Adeane said Members of Council would remember that the question as to whether the Society should sell their holding in War Loan was brought before the Council a few months ago. As every one knew, there had been recently a considerable rise, and it now stood just below par. Owing to the fact that the War Stock was short-dated, and the probability that, as the Government would be able to borrow money cheaper than 5 per cent. in six or seven years, that loan would be paid off, the Society would then have to look about for another investment. Therefore, on the advice of their bankers, it was proposed to sell War Loan now and put the money in the Conversion Loan, which yielded £4 12*s*. per cent. at the present rate. They would thus secure what was most desirable for the Society, viz., the highest rate of interest for the longest period possible. This would involve a slight loss of income, which was, however, not a serious matter.

In presenting the report of the Veterinary Committee, Lord Northbrook said he had also to report to the Council that Mr. Austen Chamberlain on the previous afternoon received the deputation, consisting of members of the Society, the Central Chamber of Agriculture, the National Farmers' Union, and other bodies, on the question of the maintenance of the Embargo on the importation of Cattle. As a condensed report of the proceedings had been communicated to the Press and appeared in the newspapers that morning, it was unnecessary, his Lordship said, for him to go at any length into the matter. He might, however, add to the report that Mr. Chamberlain had explained that in granting facilities for the discussion of the question of the removal of the embargo in the House of Commons he was merely following the custom which had been adopted by his predecessors as leaders of the House of Commons in similar circumstances. It was common knowledge that the Cabinet were not agreed on this question, so that the Government Whips would not be put on in the division. The Council would learn with pleasure that Mr. Chamberlain had promised his vote against the removal of the embargo.

Lord Bledisloe asked that the Veterinary Committee would give their attention to the question of contagious abortion, which was much on the increase. A large number of cattle were sold, very often pedigree cattle at high prices, and disseminated about the country, with the full knowledge on the part of the sellers that their herds were affected with contagious abortion. A case had been brought to his knowledge quite recently. In his opinion those animals ought to be sold subject to the agglutination test, or the person who sold an affected animal should be liable to some penalty, or be compelled to forgo a part, at any rate, of the value of pedigree cattle.

Lord Northbrook said this matter had been constantly before the Veterinary Committee, and if Lord Bledisloe would afford them information as to concrete cases, and favour them with his suggestions, the matter would receive every consideration.

In presenting the Research Committee's Report the Duke of Devonshire said the Council would see that they were making progress in three directions—with regard to the re-publication of the reports of certain work which had appeared from time to time in the *Journal*; with the whey experiments; and arrangements had now been completed for developing in the autumn and next year experiments with cereals in Norfolk. The Committee also recommended that the medal offered for research in agricultural matters, but which had been discontinued during the war, should now be revived. Slight alterations had been made in the conditions concerning the offer of the medal which were principally designed to meet the case of men who had gone to the universities and colleges after the war.

The CHAIRMAN reported that letters had been received from Miss Rowell and Mr. Hubert Alexander, thanking the Council for their expressions of sympathy in the bereavements they had sustained.

Authority was given, on the motion of the CHAIRMAN, for the seal of the Society to be affixed to a form of request for the payment of dividends to the Society's bankers.

WEDNESDAY, MAY 31, 1922.

Pending the arrival of H.R.H. the Duke of York, K.G. (President), whose other engagements prevented his reaching 16 Bedford Square until 10.15 a.m., the Hon. CECIL T. PARKER (Trustee) was called to the Chair.

The CHAIRMAN, before proceeding with the business of the Council, said it was with regret that he had to refer to the loss the Society had sustained in the death of Lord Middleton, who was first elected a Governor in 1875, a Member of Council in 1899 and a Trustee in 1904. He had been President in the year 1905, the last year the Show was held at Park Royal, and again in 1912, when the Society's country meeting took place at Doncaster. His activities as a breeder and exhibitor of Shire horses and pedigree stock were too well known to all those present to need any further reference. He would ask them to express their sympathy with his late lordship's relatives, in the usual way.

Three new Governors and 196 new Members were admitted into the Society.

On the motion of Mr. ADEANE, it was resolved:—

> "That the Secretary be empowered to issue to any duly nominated candidate for membership of the Society, on receipt of the annual subscription, a badge admitting the candidate to the same privileges as a member during the forthcoming Show at Cambridge, the formal election of such candidate to be considered by the Council at their next ordinary meeting."

[H.R.H. the Duke of York arrived at this stage and presided over the meeting during the remainder of the proceedings.]

The SECRETARY announced that the Trustees of the Queen Victoria Gifts Fund had decided to make a grant of £140 to the Royal Agricultural Benevolent Institution for the year 1922, to be devoted to grants of £10 each in respect of male candidates, married couples and female candidates, the actual distribution of each class to be left until after the election to pensions by the Royal Agricultural Benevolent Institution.

On a motion from the chair the Seal of the Society was affixed to a power of attorney in connection with the Society's investments.

WEDNESDAY, JULY 5, 1922.

HELD IN THE CAMBRIDGE SHOWYARD.

Mr. R. M. GREAVES (Vice-President) in the Chair.

In the absence of H.R.H. The Duke of York (President), Mr. R. M. GREAVES (Vice-President) was called to the Chair.

Before beginning the business of the meeting the CHAIRMAN said it was his sad duty to report the deaths of Mr. Lewis Dodd, a representative on that Council of the Division of Cheshire, and of Mr. William Carruthers, who has so well served the Society as Botanist in years gone by.

The SECRETARY read a letter in the following terms from Lord Middleton:—

> "Will you be good enough to convey to the Council my thanks for their kind message of sympathy with me and my family in our sorrow and for the expression of their regard for my brother the late Lord Middleton."

On the motion of the CHAIRMAN, it was resolved:

That the best thanks of the Society are due and are hereby tendered to:—

(1) The Officials of the General Post Office for the efficient postal arrangements in connection with the Show.

(2) The Chief Commissioner of Police for the efficient services by the Detachment of Metropolitan Police on duty in the Showyard.

(3) The Chief Constable of Cambridge for the efficient Police arrangements in connection with the Show.

(4) The St. John Ambulance Brigade No. 5 (North-Eastern) District for the efficient Ambulance arrangements in the Showyard.

(5) Messrs. Barclay's Bank, Ltd., Local Bankers, for the efficient services rendered by their officials.

(6) Messrs. Merryweather & Sons, Ltd., for the provision of fire protection appliances and for the efficient arrangements made by them in connection with the Fire Station in the Showyard.

(7) Messrs. W. Stockbridge & Sons, 49 Sidney Street, Cambridge, for decorating and furnishing the Royal Pavilion.

(8) Mr. George Willers, Trumpington Road, Cambridge, for providing Floral Decorations in the Showyard.

Letters of thanks were also ordered to be sent to various other individuals and firms for assistance kindly rendered and for the loan of articles for the purposes of the Show.

The SECRETARY then read the Awards of the Judges in the Orchard and Fruit Plantations Competition, which was confined to an area comprising the County of Cambridge, the Isle of Ely, that portion of the County of Norfolk lying west of the River Ouse, and such portion of Huntingdonshire as is within a radius of five miles from any part of the Cambridgeshire-Huntingdonshire boundary.

On the motion of the CHAIRMAN, seconded by Colonel E. V. V. WHEELER, cordial votes of thanks were passed to Mr. John Chivers, Mr. Fred Chivers, Sir Douglas Newton, K.B.E., M.P., Mr. Fred Glenny and Mr. J. L. Luddington, for entertaining the Judges; to Mr. C. F. Chivers, Mr. A. Hawkes, Mr. R. C. Cole and Mr. R. Stephenson for the loan of cars and conveying the judges during their tour of inspection; and to Mr. A. T. Paskett, Horticultural Adviser, County Hall, Cambridge, for making the necessary arrangements.

Proceedings at the General Meeting of Governors and Members,

HELD IN THE LARGE TENT IN THE SHOWYARD AT CAMBRIDGE,

WEDNESDAY, JULY 5, 1922.

H.R.H. THE DUKE OF YORK, K.G. (PRESIDENT) IN THE CHAIR.

President's Opening Remarks.

H.R.H. the DUKE OF YORK, in opening the meeting, said : My Lords, Ladies and Gentlemen,—It is a great pleasure to me to be here in my position as President at the annual general meeting of the Royal Agricultural Society on the occasion of the Annual Show being held in my old University town. (Applause.) This is the third time the Show has been held at Cambridge, and in this connection it is gratifying to note the wonderful increase, both in size and importance, both of the Society and of the Show, since the first Show took place here in 1840. (Hear, hear.) Without entering into too many details, the Show has increased in extent from the 5 acres which it then occupied on Parker's Piece to over 120 acres on the magnificent site so generously placed at our disposal by my old College of Trinity. The prize money, from the £900 of that date, has risen to the £13,800 which is being offered at this Show, while the entries of live stock and implements have swollen to an amount which admits of no comparison with the two previous Shows held in Cambridge. The most striking thing of all is the membership of the Society, which has increased from the 3,000 of the year 1840 to the wonderful total of 13,375. I hope that the mournful prophets who seek to impress upon us that British agriculture has had its day will read and realise the significance of these remarkable figures. Eighty-three "new implements" are entered for the Society's silver medal, and this, I think, reflects the greatest credit upon the inventive genius and progressive spirit of agricultural machinery manufacturers. This is all the more creditable considering the differences which have taken place in the engineering trade and the lack of demand by foreign countries for agricultural implements, which must have lessened the incentive for invention that is so necessary for the creation of anything which is new. I heartily congratulate the implement exhibitors on the remarkable way they have overcome all these difficulties and on the assembly of such a wonderful show of machinery.

Turning to the live-stock section, the recent outbreak of foot-and-mouth disease, which spread so rapidly throughout the country, must have caused the owners of valuable stock to think very seriously before deciding to send their animals to the Show. Their courage is greatly to be admired, and I trust it has had its reward in the prizes gained by them in the various sections. The forestry, horticultural, education and bee sections are well represented. Therefore, in spite of the difficulties, to which I have alluded, in the implement and live-stock sections, the Cambridge Show has created a record of entries, and the Society and exhibitors are greatly to be congratulated on the fact that the Show promises to be a most successful one.

As on former occasions, the county, the town and the University have vied with each other in giving to the Society a very cordial welcome. Resolutions will be submitted to you tendering the thanks of the Society to the various bodies which have contributed so largely to the success of the Show, and they will, I feel sure, meet with your cordial approval. I cannot, however, allow this opportunity to pass without referring to the vast amount of work which your Honorary Director, Sir Gilbert Greenall —(applause)—has done in the preparation, organisation and administration of this show and to his expert knowledge and untiring energy. In the name of the Society I would like to thank him. (Applause.)

Thanks to Mayor and Corporation.

The DUKE OF DEVONSHIRE said His Royal Highness had already referred to the cordial reception which the Society had met with from the Mayor and Corporation. His Grace wished to move formally, "That the best thanks of the Society are due and are hereby tendered to the Mayor and Corporation of Cambridge for their cordial reception of the Society." They all knew now, his Grace said, or would have some little idea, of the vast amount of work entailed on those responsible for the organisation of the Show. They were all aware of the splendid work of Sir Gilbert Greenall, but that work would not be possible if he were not supported by the local authorities wherever the Society went. In the present instance Cambridge had worthily risen to the occasion, and the Society could always look back on their visit with the greatest pleasure and satisfaction and look forward to some future occasion when they would have the opportunity of again paying a visit to the University town.

Lt.-Col. E. W. STANYFORTH, in seconding the resolution, felt that few words were needed, but he would like to point out that it was no formal resolution of thanks that the meeting were asked to pass, because the Society owed a deep debt of gratitude to the Mayor and Corporation of Cambridge. When he told them that the last time the Society visited Cambridge a similar resolution was proposed by the late King, who was then Prince of Wales, members would realise that they placed great importance on this resolution. He therefore asked them to pass it with great cordiality.

On being put to the meeting the vote of thanks was heartily accorded.

Local Committee Thanked.

Sir GILBERT GREENALL said it was with very great pleasure he rose to propose that the best thanks of the Society be tendered to the Cambridge Local Committee for their exertions to promote the success of the Show. This was a resolution that some of those present had heard him propose at a good many Shows, but he could honestly say that never had he performed the task with greater pleasure than on the present occasion. The work of the Local Committee had been enormous this time. With the exception of the field on which the large horse-ring stood, the showground three years ago was arable land. It was laid down to grass, but in view of the terrible time experienced last year it was a surprise that they had any grass at all. Their President had referred to what he (Sir Gilbert) had done, but he could do nothing at all without the co-operation of the Local Committee. A tower of strength on the present occasion had been the Mayor of Cambridge. In fact, Sir Gilbert said, the Mayor had done nothing else for the last eighteen months. If they wanted a gatekeeper they went to the Mayor and asked his assistance. (Laughter.) Then, again, they had their old friend, Mr. Peters, who had acted as Local Secretary for the show of 1894. That gentleman had a wonderful memory, and was able to recall everything that had been done twenty-eight years ago. He would like to join with the resolution his own personal thanks for all they had done and for their great courtesy and kindness. (Applause.)

Mr. WILLIAM HARRISON desired to associate himself with everything Sir Gilbert had said as to the hard work done by the Local Committee. The number of meetings those gentlemen had to attend in London and other places in connection with the Show arrangements was not generally realised. He had great pleasure in seconding the motion that the best thanks of the meeting be given to the Local Committee.

The resolution of thanks was unanimously passed.

The MAYOR OF CAMBRIDGE (Mr. G. P. Hawkins), in acknowledging the resolution, said that when he was approached three years ago to try to secure the holding of the Show in Cambridge, he had naturally to think of finance. His path, however, was made quite clear by a gentleman who undertook to guarantee the entire sum of £6,000 asked for; so that when he came to the Society two years ago he had in his pocket the whole of the money required. The name of that gentleman, the Mayor said, was the Rev. C. H. Brocklebank. (Applause.) He had been told not to mention the name some time ago, but he thought that now the ban had been taken off. To the Local Committee and to Mr. Peters was due all the honour, and he desired to add his thanks also to the Master and Fellows of Trinity College—where he knew His Royal Highness as an undergraduate—for the use of the ground for the Show. They had lent the site and had given all the help possible. It was due to the College that Cambridge had been able to extend an invitation to the Society. He was hoping that this was only one occasion of many upon which they would see His Royal Highness in Cambridge. (Applause.)

Thanks to Railways.

The Hon. CECIL T. PARKER proposed that the best thanks of the Society be tendered to the railway companies for the facilities afforded by them in connection with the Show, especially to the Great Eastern Railway for the special arrangements made by that company. He understood that the railways had dealt with the traffic extraordinarily well, and the thanks of all exhibitors were due to them.

This resolution was seconded by Mr. J. HOWARD HOWARD and unanimously adopted.

H.R.H. the PRESIDENT, in accordance with the usual custom, then asked if any Governor or Member had any remark to make or suggestion to offer for the consideration of the Council.

No advantage was taken of this opportunity by any of those present.

Thanks to President.

Lord AILWYN said that some months ago he had the honour of proposing H.R.H. the Duke of York as President of the Society for this year. He now had the still greater honour of moving that a hearty vote of thanks be given to His Royal Highness for his services. They would all agree that His Royal Highness had well carried out the traditions of his Royal House, the members of which had always taken a deep interest in the work of the National Agricultural Society. He recalled with pleasure the visit of H.M. the King, then Duke of York, to the last Show held at Cambridge in 1894. His Royal Highness as President had spared no pains to make himself acquainted with the work of the Society, and his services in the Chair at the monthly Council meetings of the Society had been a great help.

Mr. JAMES WATT (Carlisle), as a very old member coming from the border of the two countries, had great pleasure in seconding the vote of thanks to His Royal Highness for his services to that great educational institution. The President's value, he said, could not be measured by the takings at the gate or by the number of meetings His Royal Highness had attended, but by the satisfaction of the agricultural public at home and abroad. The presence of His Royal Highness on that platform, side by side with the Duke of Devonshire, who had been Governor-General of one of their greatest colonies, should become known to every Canadian, for the words he had spoken would create great enthusiasm for agriculture through the Dominion. He (the speaker) came from the North. It might, he said, be a great honour to hold a dukedom in wealthy England, but it was a far greater honour to own a Scottish earldom and be acclaimed by every man and woman who was worth a farthing in the country with such a euphonious name as the Earl of Inverness. (Applause.) He hoped His Royal Highness, as he grew older, would lend the same interest to the agriculture of Scotland as he had done in England, and he was sure that with the capacity and brains of the Scotsman—(laughter)—and the wealth of England this country would continue to be the greatest on the globe. He hoped that some day the Society would again have as their President one who was known as the greatest British Ambassador. (Applause.) They were poor agriculturists in the North, but they were loyal and patriotic, and had rendered great service in this country. Scotland sent them a Prime Minister not many years ago, and they had made him an earl. He would like to see their honorary director made an earl. (Applause and laughter.)

In conclusion, Mr. Watt said he hoped that His Royal Highness the Duke of York would be spared to them for many, many years, but he hoped he would never be King of England. (Loud laughter.) The occasion, he hoped, would never arise.

H.R.H. the **President**, in acknowledging the resolution of thanks, said: "I can assure you, my lords, ladies and gentlemen, that any small services I may have been able to render to the Society during my period of office have been a very great pleasure to me. At the council meetings of the Society I was able to get some slight idea of what a vast science there is in agriculture, and at the same time I acquired an interest in it which I shall always retain. I would like to thank Lord Ailwyn and Mr. James Watt for the very kind words they have used in moving this vote of thanks, and I would like to thank you, my lords, ladies and gentlemen, for the very generous reception that you have given to me to-day. I will only add that I am very proud and glad to have been able to continue the long association which my family has had with the Society. I again thank you very much." (Applause.)

WEDNESDAY, AUGUST 2, 1922.

The Hon. **Cecil T. Parker** (Trustee) in the Chair.

Five new Governors and 367 new Members were admitted into the Society.

Mr. **Adeane**, in presenting the report of the **Finance** Committee, said he was unable to give the Council the result of the Cambridge Show, but he could tell them that the figures were working out much better than they expected, and if there was a loss it would be a small one.

With regard to the paragraph in the report dealing with Willesden rates—really this question, Mr. Adeane said, was a legacy inherited from Park Royal. The Royal Agricultural Society, when they bought Park Royal, made themselves liable for the payment of certain annual sums for sewerage expenses in the nature of rates to the Willesden Council. It was found necessary to form a company, called Park Royal, Limited, and they took over the land and agreed to indemnify the Society. The property was in turn sold to Park Royal Estates, who also agreed to indemnify the Society. Park Royal Estates had now sold the property to private owners, who, in their turn, had covenanted to pay the sewerage expenses. The Willesden Council, however, refused to collect these expenses from the present owners, and adhered to the agreement made in 1903 between the Society and the Willesden Council. The Society was called upon to pay the sum of £588 12*s.* 1*d.* for the year ending March, 1922, and they must collect it from the individual owners of the property.

At the request of Mr. Adeane, Mr. **Arthur E. Clarke**, of the firm of Garrard, Wolfe, Gaze and Clarke, the Society's Solicitors, also made a statement to the Council concerning this matter.

On the presentation of the VETERINARY Committee's Report, a discussion ensued regarding the new instructions to be given by the Council to the Society's representatives on the Live Stock Defence Committee. On the motion of Mr. ADEANE, seconded by Lord BLEDISLOE, the Committee's recommendation on this matter was amended to read as under :—

> "The Veterinary Committee now recommend the Council to give authority to their representatives on the Defence Committee to support the Minister of Agriculture in taking steps to safeguard *the health of the live stock of this country* under the new circumstances which have arisen."

Subject to this alteration, the report was then adopted.

Sir WALTER GILBEY asked leave to refer to the Exportation of Horses Bill, which, if passed, would affect most seriously the horse-breeding interests in this country. He hoped the Royal Agricultural Society would urge the Minister of Agriculture to oppose this Bill in every way so as to prevent it becoming law.

The Report of the SELECTION Committee was received and adopted, including a recommendation that the name of Lt.-Col. E. W. Stanyforth be suggested to the Annual General Meeting for election as President for the year 1923.

Lt.-Col. STANYFORTH said it was very difficult to find words to express his gratitude to his colleagues for the confidence placed in him and for the honour it was suggested should be conferred on him at the next Annual General Meeting of Governors and Members. He had been associated with the Society for a great number of years, for it was in 1884 that the Chairman had introduced him to the Society, and he had acted as an assistant steward at the Shrewsbury Show of that year. He was elected to the Council in 1891, and for a number of years occupied positions at the Annual Show as steward in the several departments. It was true, of course, that during that time he had learnt a very great deal of the work of the Society. He had been with the Society during many ups and downs and in its troubles and successes, but he was perfectly confident that that was not all that was required in a President of that Society, and when he looked at the scroll of names behind him of those who had occupied the Presidential Chair he naturally felt somewhat diffident in allowing his name to be put forward. He did so, however, because not only had he had a considerable experience, but he also happened to have a great number of very old and valued friends on that Council who, he felt sure, would support him if he took office. There were also many others on the Council whom he did not know so intimately, but who he was confident would accord him their support. It was with the utmost humility that he allowed his name to be put forward and he could only trust that if he was spared to become President the honour and prestige of the Society would not be lowered during his year of office.

Mr. OVERMAN, in moving the adoption of the RESEARCH Committee's Report, said the Council were aware from this Committee's monthly reports of the work upon which Mr. Whetham was engaged. These investigations had now reached a point when some information might be given to Members of Council, and, with the Chairman's leave, he would ask Mr. Whetham to make a short statement.

Mr. DAMPIER WHETHAM then gave an account of the experiments on the utilisation of whey which are being carried out under the auspices of the Research Committee. Forty million gallons of whey are wasted annually in this country, a volume which contains £1,000,000 worth of lact-albumen and lactose or milk sugar. Lactose is much used for infants' foods, etc., but is all imported. The published accounts of the foreign methods of manufacture seem incomplete, and the factories are not shown to strangers. To start the industry in England, therefore, experiments are necessary, and when the Research Committee was formed last March it decided to undertake them, in conjunction with Mr. Whetham and the Ministry of Agriculture, who were already experimenting on the subject. The Research Committee engaged a chemist, Mr. Leonard Harding, who first carried out a series of laboratory experiments at Cambridge, and is now working at Hilfield, Dorset, where last year Mr. Whetham equipped a small lactose factory. Mr. Harding worked out in the laboratory a satisfactory method of extracting lactose, which follows the general lines of what seem to be the foreign methods, and is now testing it with success on the large scale. Experiments are also being made on the best method of separating the albumen, and on the production of a soluble form of dried whey, which might be made in cheese factories and used as a raw material in the manufacture of milk sugar.

Lord BLEDISLOE said they owed an immense debt of gratitude to Mr. Dampier Whetham for the valuable work he had done, and for the interesting exposition he had given the Council that morning. It was not often that a man of science gave both his property and brains to the service of the Society. Mr. Whetham had done both, and they were greatly indebted to him. He (Lord Bledisloe) could not help thinking that the work which Mr. Whetham had undertaken, and which afforded ample justification for the existence of their Research Committee, was going to bring considerable credit to the premier agricultural society of this country.

WEDNESDAY, NOVEMBER 1, 1922.

Mr. R. M. GREAVES (Vice-President) in the Chair.

Before commencing the business of the day, the CHAIRMAN said he had a sad duty to perform in officially announcing the death of their old friend Sir John Thorold. He was sure that everyone on that Council would feel that they had lost a personal friend. In his life he had known no man of whom it could be more truly said that to know him was to love him. Members of Council had lost a friend, and the Society had lost an invaluable worker and supporter. Sir John's connection with the Society was a wonderful record. He became a member in 1868, joined the Council in 1881, was elected a Vice-President in 1889, a Trustee in 1899, was President in 1895, and from 1896 to 1921 was Chairman of the Committee of Selection and of the Journal Committee. As a member of those Committees he (the Chairman) said he could testify to the admirable way the work was carried out. He felt sure that it would be the wish of them all that a vote of condolence should be passed and forwarded to the family.

The vote was then passed, members present rising in their places.

Two new Governors and 33 new Members were admitted into the Society.

The Report of the SPECIAL Committee on Governors' and Members' privileges was presented by Sir GILBERT GREENALL, who moved its adoption by the Council. Among the recommendations made in this report were the following: That the Council and Governors' Luncheon Room in the Showyard should be considerably enlarged; that Governors should be given the first refusal, up to a date to be fixed each year, at the ordinary charges, of seats in the *reserved* portions of the Grand Stand at the Horse Ring; that certain modifications be made in the regulations regarding the applicability of the privileges of Chemical analysis.

Mr. LUDDINGTON said that as Members of Council had not received a copy of the report, probably they would be willing that it should be presented that day, and that it should come before them for confirmation at the next meeting. There were two or three points on which he would like to be in a position to consult the members of the Chemical Committee.

Sir GILBERT GREENALL said that there was a good deal to be done arising out of this report, in the way of extra building in the showyard, and in communicating the details of the new arrangements to the Governors before the end of the year. The Council could reject the report if they wished, but he might say that the decisions it contained had not been arrived at in a hurry.

Mr. LUDDINGTON asked to be allowed to say one word regarding a point raised in the report. It stated that a letter had been read from a member of the Society as to the fee charged him by Dr. Voelcker for an analysis. He (Mr. Luddington) understood that the letter referred to was written more than a year ago, and the Chemical Committee felt that in a case of complaint by any member against Dr. Voelcker, or anyone like that, it should come before the Committee, who could investigate the matter. They felt that this letter might have been submitted to them, and they could have reported to the Council. They asked that this course might be adopted in future. If any complaint of this character was made, it should, at all events, be referred to the Chairman of the Committee, and he should be given an opportunity of making an explanation.

Sir GILBERT GREENALL said that this, in the ordinary way, was always done, but the letter in question had arrived at the time when the future of Woburn was under consideration.

Mr. LUDDINGTON then moved :—

'That the report of the Special Committee be deferred until the next meeting."

Mr. FALCONER, in seconding, said he thought it was only right that the matter should have more consideration.

Sir GILBERT GREENALL said the Special Committee was appointed to go into this matter, and they had done so very thoroughly. It was not much use coming up to London to attend these Committees if, because a letter had not been sent to the Chemical Committee, the whole report was to be turned down. It was absurd.

Mr. Luddington's motion was then put to the meeting and declared to be lost.

The report of the Special Committee was then adopted, and the last paragraph was referred to the Journal and Education Committee for consideration and report to the Finance Committee.

Colonel WHEELER stated that, in accordance with the decision of the Council at their last meeting, representatives of the Botanical Committee had met certain delegates from the Federation of British Growers and the Kent County Branch of the National Farmers' Union on the previous day, and had settled a scheme for next year's Orchard and Fruit Plantation Competition. The area would comprise Kent, Surrey and Sussex. The number of medals offered would be as this year, but the regulations governing the competition had been modified to meet the different conditions. They had also selected the names of two gentlemen to act as Judges.

Mr. BROCKLEHURST made reference to a resolution passed by the Gloucestershire Agricultural Committee advocating that local authorities be empowered to restrict movement of animals in an area in all suspected cases of foot-and-mouth disease.

Lord NORTHBROOK undertook that the matter should be brought before the Veterinary Committee if Mr. Brocklehurst would communicate with the Secretary thereon.

In presenting the Report of the IMPLEMENT Committee, Colonel STANYFORTH referred to its last paragraph. Professor John W. Paterson, of the University of Western Australia, had suggested that the Society should make a test of a combined seed and manure drill under English conditions; but, as the Ministry of Agriculture had set up a Committee for the purpose of making investigations of this character. it was thought that such a test could be better undertaken by the Ministry through their Agricultural Machinery Committee than by the Society.

On the recommendation of the Committee of Selection, Sir Gilbert Greenall was appointed Honorary Director for the Newcastle Show; Lord Ailwyn was elected a Trustee; and Lord Harlech was elected a Vice-President.

Lord BLEDISLOE, in moving the adoption of the Research Committee's reports, thought it was only fair that he should add that at the time the Society took over Mr. Dampier Whetham's factory at Hilfield, Dorset, it had been stipulated, as a matter of business, that the difference between the valuation of the plant when the Society went in and when they came out should be allowed to him. As a matter of fact, the two valuations showed a difference of over £800, but Mr. Whetham had generously offered to wipe out that liability altogether, and had made a present of it to the Society. Mr. Whetham's work and generosity had testified to the value of the activities of the Research Committee with unexpected rapidity.

Mr. DAMPIER WHETHAM said it would be remembered that when the arrangements between the Society and the Ministry of Agriculture as to the division of the work on whey had been made, three special points were assigned to the Society for investigation. The first was the extraction of milk sugar, or lactose, from fresh whey by means of a vacuum pan; the second was to find some soluble form of lact-albumen; and the third was the consideration of the best means of transporting whey from cheese factories to a central lactose factory. When the Council met in August he had been able to say that the experiments on the first of the three points had begun well. He had then shown a sample of crude lactose—crude milk sugar—they had already obtained, which, on analysis, proved to be 96·3 per cent. pure. Very shortly after, that crude lactose had been re-crystallised, and they had got fine white lactose which was 99 per cent. pure. That was a quite satisfactory product. The ash was rather high, ·51 per cent., but afterwards they had got specimens where the ash was ·14 per cent. In the usual process for the extraction of lactose from whey the albumen was coagulated—heated and coagulated—and therefore it became insoluble. The Ministry of Agriculture were extremely anxious that the Society should, if they could, find some way of making this coagulated albumen soluble. As he had said, it rather came to "unboiling your egg." They had not been able to make albumen itself soluble, but he had arranged for some experiments to be made in Prof. Hopkins' Laboratory at Cambridge, and they had found out how to prepare a soluble albumen compound which was just as good. With regard to the third problem, whey, containing as it did 93 per cent. of water, could not easily be transported; it would be very costly to send it by train. They had tried to solve this problem by means of dried whey, and, although they knew what form of apparatus was required to make soluble dried whey, they had not produced it on a large scale. But it soon became clear to them that the solution of the question was not dried whey, but whey concentrated to a thick liquid one-tenth of its original volume. He need not trouble the Council at that stage with the reasons for this, but the concentrated liquid was cheaper and easier to use. They had prepared this concentrated liquid in a form which was quite easy to make. It could be sealed up in tins and sent to the central lactose works. It was quite easy to prepare from this concentrated liquid both lactose and lact-albumen.

Therefore it was, he thought, fair to say that at the end of September, when the Society's experiments came to an end, the three problems which had been assigned to them had been satisfactorily solved. There were some subsidiary points arising on which further work was required. Mr. Harding and himself hoped to be able to follow up some of these later.

The report of the Council to the Annual General Meeting of Governors and Members, to be held at the Royal Agricultural Hall, Islington, at 2.30 p.m. on Wednesday, December 6, was prepared and ordered to be issued.

On a motion from the Chair, the Seal of the Society was ordered to be affixed to the agreement with Messrs. Markwell, Holmes & Co., of Grimsby, for the construction of a new entrance pavilion at the Newcastle Show.

WEDNESDAY, DECEMBER 6, 1922.

H.R.H. The Duke of York, K.G. (President), in the Chair.

Five new Governors and 116 new Members were admitted into the Society.

The Report of the Finance Committee was received and adopted. Mr. Adeane, in presenting the Accounts for the Cambridge Show, said the receipts as compared with Derby were £11,000 less. That was almost entirely due to a falling off of "gate." They did not expect as large a "gate" as they had had at Derby, but, at the same time, it would have been very much greater had they had fine weather. The expenditure showed a saving compared with Derby of £1,436; that was almost entirely on printing. But, in spite of the weather, he was glad to be able to say that, though the balance was a small one of £57, it was on the right side. It was only fair to say that had it not been for the charge of £1,500 placed aside for the provision of new timber, the balance on this year's Show would have been £1,557. They had now an accumulation of some £3,000 in the timber fund, and it was recommended that this should be used for the erection of new entrance buildings to the ground at Newcastle. He thought they would all agree that the show at Cambridge was one of the finest ever held, and, with the exception of the weather, they were fortunate in every respect. They were fortunate in having as their President H.R.H. The Duke of York, who had been particularly energetic and hard working not only in attending the Show, but also in presiding at the Council meetings throughout the year. He (Mr. Adeane) was quite sure that it was a matter of regret to them all that His Royal Highness's year of office was now about to terminate. They were also fortunate in having a very energetic local committee in Cambridge, presided over by Mr. Hawkins, the late Mayor, who had done everything possible to make the Show a success. They could not forget the great hospitality they had received from the University of Cambridge, especially from the Fellows of Trinity College, who had entertained the whole Council to dinner during the Show week. They must all recognise, too, on this occasion, the great services rendered by their Honorary Director, Sir Gilbert Greenall.

In presenting the Report of the Chemical Committee, Mr. Luddington said it had been suggested that the hour of their meeting should in future be altered to 2.15 p.m. He begged to add to the report a recommendation to that effect. The report with this addition was received and adopted.

A Report was received and adopted from the Veterinary Committee, including a recommendation:—

> "That a Committee be formed of representatives of the Royal Agricultural Society, the National Cattle Breeders' Association, the National Sheep Breeders' Association, the National Pig Breeders' Association, and the National Council of Pig Breeders and Feeders, to consider, in conjunction with Sir Stewart Stockman and Sir John McFadyean, the whole question of the present live stock import regulations of the British Dominions Overseas and Foreign Governments, with a view to drawing up a definite scheme and approaching the representatives of those Governments to obtain more favourable conditions for the exportation of British Stock."

It was further recommended that Lord Northbrook, Sir Merrik Burrell, Mr. Chapman and Mr. Mansell be asked to act as the Society's representatives on the proposed Committee.

On the question of general showyard arrangements, Sir DOUGLAS NEWTON made the following suggestions:—(1) That the Council should take some steps to set up a hospitality committee for Overseas visitors and foreigners; (2) With regard to the Show Catalogue, he thought it would be more useful to visitors if the edges could be "stepped" and the names of the different sections shown; (3) That the Council should consider the possibility of installing a light tramway, as was found at most exhibitions; (4) That an arrangement should be made with the Caterer to supply English fruit and also English meat, etc. As far as was reasonable and practicable, the food supplied should be English grown.

(H.R.H. The Duke of York having at this stage to leave the meeting to keep another engagement, the Chair was taken by Mr. R. M. GREAVES.)

The Report of the Committee of SELECTION having been received and adopted, the CHAIRMAN announced the names of the newly-elected members of the Council present at the meeting. On behalf of the Council he offered them a very cordial welcome, and expressed the hope that they might long be spared to attend the meetings and help in the Society's work.

The following Standing Committees were appointed for 1923:—Finance, Journal and Education, Chemical, Botanical and Zoological, Veterinary, Stock Prizes, Implement, Showyard Works, Selection, Dairy and Produce, and Research. The present members of the various Standing Committees were (with some exceptions) reappointed to those Committees. Sir Merrik Burrell and Mr. Greaves were added to the Finance Committee, Lord Mildmay of Flete to the Journal and Education and Veterinary Committees; the Rev. C. H. Brocklebank to the Journal and Education and Stock Prizes Committees; Mr. Neilson to the Chemical, Showyard Works and Dairy Committees; Mr. Walker-Tisdale to the Chemical Committee; Mr. Miln and Captain France-Hayhurst to the Botanical Committee; Mr. Bell to the Veterinary, Implement and Showyard Works Committees; Mr. Sherwood to the Stock Prizes and Implement Committees; Mr. Ridley to the Showyard Works Committee; Lord Ailwyn and Colonel Courthope to the Committee of Selection; and Mr. Adeane to the Research Committee.

The Seal of the Society, on a motion from the Chair, was affixed to a document authorising the payment of dividends direct to the Society's bankers.

Proceedings at the Annual General Meeting of Governors and Members,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON,

WEDNESDAY, DECEMBER 6, 1922.

H.R.H. THE DUKE OF YORK, K.G. (PRESIDENT) IN THE CHAIR.

President's Opening Remarks.

H.R.H. the **President**, in opening the proceedings, said:—

"My Lords and Gentlemen,—It is with the greatest possible pleasure that I preside to-day at the Annual General Meeting of the Governors and Members of the Royal Agricultural Society of England, and in the first place it is my duty to express the thanks of that Society to the Royal Agricultural Hall Company, and also to the members of the Smithfield Club for the loan of their Club Room for this meeting.

"My Lords and Gentlemen, the Report of the Council to Members of the Society has, I understand, been circulated, and should be in your hands. You will see that 738 Governors and Members have been lost by death and other causes during the current year, and that the increase in membership over last year is 407. There is no need for me to emphasise the importance of securing new members, and I feel sure that each and all of you will do his utmost to make our losses good and increase our membership to somewhere near the 14,000 mark.

"The Show at Cambridge, as most of you know, was a very successful one, in spite of the many difficulties with which the Council was confronted owing to the outbreak of foot-and-mouth disease in the months preceding the Show The weather, too, on most days of the Show was wet and stormy, a factor which doubtless kept many thousands of visitors away. Yet in spite of these drawbacks the Society is able to report a successful Show, not only without any financial loss, but, as you will see from the balance-sheet, a slight surplus. I was glad to be able to visit the Show on several days, and I most heartily congratulate our Director and his staff, and all who took part in the wonderful organisation, on the way in which the difficulties were met.

"As an old Cambridge man I would like to express our appreciation to the University Town for the hearty reception we received and for all that was done to make our stay a pleasant one.

"The auguries for the forthcoming Show at Newcastle-on-Tyne are most encouraging. A splendid site on the Town Moor has been offered by the civic Authorities and the Freemen of the City, and I understand that the counties of Northumberland and Durham are enthusiastically determined that the 1923 Show shall be an even greater success than the one held there in 1908. The breed societies also have expressed their willingness to increase liberally the prize fund, and to do their utmost as in former years to promote the success of the Show. Consequently, with their co-operation and monetary help, and with the well-known energy and the assistance of the North of England agriculturists I think we may look forward with confidence to the next 'Royal,' and I would like to express my sincere wishes for its unqualified success.

"May I take this opportunity of expressing my thanks to the Members of the Council, and to our excellent Secretary, Mr. Turner, for the great help they have given to me in my year of office, and for making my duties so easy and so pleasant. I would also like to express my great appreciation of the honour that has been done me in my election as a Trustee of the Society. I have learnt enough during the past year to realise what a great help the Royal Agricultural Society of England has been and can be to British agriculture, and it is a great pleasure to me to know that although I give up my office as President, I may still remain in association with the Royal Agricultural Society as Trustee."

Accounts.

Proceeding to the ordinary business, HIS ROYAL HIGHNESS said the first item on the agenda was the presentation of the balance-sheet, which was printed in the volume of the JOURNAL issued to members this year. The accounts for the Cambridge Show were in the hands of those present. The report of the Council had been printed and circulated through the post to each Governor and Member, and the meeting would no doubt be willing that it should be taken as read.

Adoption of Report.

The Hon. ALEX. PARKER said that His Royal Highness had already dealt with one or two points, but there were a few remarks he would like to make in proposing that the report be adopted. They had this year lost by death many important and valuable members of the Society, but there were one or two that stood out, and he thought the meeting would like to show how much they appreciated them and the work they had done. He referred to Lord Middleton, Sir John Thorold, Mr. John Rowell and, amongst the Governors and Members, Lord Manton. It was not necessary for him to tell those present all that Lord Middleton had done in the way of helping agriculture. He was an agriculturist born and bred, and lived for nothing else ; he had been a breeder of shire horses, hunters, shorthorns and other pedigree stock, and any show or meeting appeared to be a blank without his presence. In Sir John Thorold they had one of the old school, whose whole life had been given up to the interests of their Society. Mr. John Rowell, who would be remembered as a steward at the Show, had the interests of the Society at heart. He (the speaker) should say that not one of those three had had a single enemy among the whole of the members of the Society. Lord Manton had been greatly interested in everything to do with agriculture, had run a research laboratory of his own, and had been looking forward to helping the Society and agriculture generally to the best of his ability and resources.

His Royal Highness had also mentioned the Show, but he thought there would be no harm in his saying what an unexpected and great success the Cambridge Show had been when everything seemed to militate against it. He was sure they would agree with him that the success of the Show to a large extent was due to the energy and ableness of their Honorary Director. (Hear, hear.) Did they really know how much they were indebted to Sir Gilbert Greenall ? He did not think any of those present could realise how much Sir Gilbert had done for the Society.

The various interests of the Society had been well looked after by the Council during the past year, and, so far as he could make out, with greater success than usual. The Society appeared to be flourishing in a most splendid way. They must not, however, be satisfied with the fact that membership had increased by a thousand during the past twelve months. The Council, he believed, were of the opinion that they should not relax their efforts to obtain new subscribers until they had a membership of 20,000. He suggested that everyone should use his efforts to get a new member, and thus help on the Society's work.

Mr. J. THORNBORROW (Penrith) had great pleasure in seconding the motion, which had been so ably put by Mr. Alex. Parker. The report, he was sure, was satisfactory from every point of view to the members of that great Society.

Mr. J. J. Cridlan asked to be allowed to say a few words before the report was adopted. Last year he had had the pleasure of seconding the report, and in doing so he had pleaded strongly for a certain point, which had not been conceded. They were passing through strenuous times, and he was speaking on behalf of the tenant farmer. There were many present to whom the amount of the entry fees of cattle and horses did not make much difference. But when that Society, after the disaster at Darlington, decided to raise the entry fees to those members of the Society who made the Shows, he thought they took a wrong turning, and his object in raising the question to-day was to ask them to retrace their steps. After Darlington their chancellor of the exchequer, Mr. Adeane, had been most pessimistic, instead of being optimistic and relying on the whole body of members of the Society, and had put a tax on that part of the members who made the Show. Mr. Adeane had given them some figures, and had told them that the cost of providing for a bull at the show was £4 14s. 8d.; that was on the debit side. What did he put on the credit side ? Nothing whatever. Those bulls, the cattle, horses and other exhibits, helped to make the "gate" successful. Speaking of the cost of exhibiting at the Show, he said, in the first place there was the entrance fee of £3, added to which there was the railway freight—in his own case, from Gloucestershire, of £7 15*s.* 6*d.* Railway freights were admitted by all to be extortionate. What would it cost an exhibitor to send his animals from Cornwall to the Newcastle Show ? Then there was the expense of the herdsman attending the Show in charge of the stock. He ventured to think that what was justified after the Darlington Show was not justified now. He hoped the Council would take into consideration before the Show to be held in 1924 the question of entry fees, and reduce them to what they were before the Darlington Show.

The report was then adopted.

Election of President.

The Hon. Cecil T. Parker proposed : "That Lieut.-Col. E. W. Stanyforth be elected President of the Society, to hold office until the next ensuing annual general meeting." (Applause.) Colonel Stanyforth, he might tell them, was no novice, for he had joined the Council of the Society in 1891. Previous to that he had been for five years an assistant steward at the Show. There could be no question that he was a right and proper person to be elected President. It would, he (Mr. Parker) knew, give great pleasure to all Governors and Members in the North, and especially those in Yorkshire, where Colonel Stanyforth's home was. Therefore it was with much pleasure that he proposed his election.

Mr. C. W. Tindall said the only reason that suggested itself to him why he had been accorded the privilege of seconding this resolution was that he had had the pleasure of being a friend of Colonel Stanyforth for a great number of years. He (the speaker) had had the privilege also of knowing Colonel Stanyforth's uncle, whom he had succeeded, and who in his day had been one of the most eminent members of the Royal Agricultural Society. Worth was a thing they valued, and work, and he could assure those present that no one had earned the position in which they proposed to place him more than Colonel Stanyforth. It was fully justified by the real work he had done for a great number of years. He had great pleasure in seconding the resolution.

The resolution having been put to the meeting, was passed unanimously,

Lieut.-Col. E. W. Stanyforth said that, in according him that great honour, he could only say first that he appreciated very, very much that the proposer and seconder of the resolution were such old friends of his. In Mr. Parker he looked back to one who had given him his first lessons in agriculture in the year 1882. Mr. Parker had first introduced him to the

Council, and he begged to thank him most sincerely. It was a matter of great satisfaction to him, too, that so old and valued a friend of his as Mr. Tindall should second the resolution. What could he say to those present ? He did not think there was any honour or position that an English gentleman who had given up his time and interest to agriculture could value more than that of being elected President of the Royal Agricultural Society. (Applause.) He thanked the meeting from the bottom of his heart for the honour they had accorded him that day, and it would be his endeavour to fulfil satisfactorily the duties they had placed upon him. It was perfectly true, as Mr. Parker had said, that he had been identified with the Society for a great number of years, and therefore knew the ropes. But he was equally aware that that was not all that was necessary in one who occupied the position of President of that Society. He thought His Royal Highness would agree that it would not be an easy task to follow him, and when he looked back at the list of past-Presidents and saw the names of Queen Victoria, King Edward the Seventh, the present King, the Prince of Wales, Prince Christian and the Duke of York, he thought it was a very difficult task for a humble commoner like himself to follow in their footsteps. But it was with the confidence that he could rely on the indulgence not only of the members, but of his friends on the Council, that he would strive to follow the example of those members of the Royal Family and of those noblemen and gentlemen who had in the past occupied the presidential chair. It would be his aim to increase the popularity, scope and interest of the Society and to fulfil that onerous task. He happened to be chosen when the "Royal" was going to Newcastle, and they could not have selected a place where, he thought, there was more likelihood of reaping a golden harvest. Newcastle was an important centre, with a large population of its own, and they had always accorded a hearty welcome to the Society. He felt that the honour was not only a personal one, but was a compliment to the North Country and Yorkshire. He sincerely hoped that at the end of his term of office their confidence in him would not be shown to have been misplaced. (Applause.)

Election of Trustees.

The PRESIDENT announced that the following twelve trustees had been nominated by the Council in accordance with the by-laws :—

H.R.H. the Prince of Wales, K.G., York House, St. James's Palace, S.W.1.
H.R.H. the Duke of York, K.G., Buckingham Palace, S.W.1.
C. Adeane, C.B., Babraham Hall, Cambridge.
Lord Ailwyn, K.C.V.O., K.B.E., Honingham, Norwich.
The Duke of Bedford, K.G., Woburn Abbey, Bedfordshire.
Sir J. B. Bowen-Jones, Bart., Council House Court, Shrewsbury.
Col. F. S. W. Cornwallis, Linton Park, Maidstone, Kent.
The Earl of Coventry, Croome Court, Severn Stoke, Worcestershire.
The Duke of Devonshire, K.G., Chatsworth, Bakewell.
Sir Gilbert Greenall, Bart., C.V.O., Walton Hall, Warrington.
The Earl of Northbrook, Stratton, Micheldever, Hampshire.
The Hon. Cecil T. Parker, The Grove, Corsham, Wiltshire.

On a show of hands they were declared re-elected as trustees, to hold office until the next ensuing annual general meeting.

Election of Vice-Presidents.

The Vice-Presidents were elected in a similar manner, their names being :—

C. Coltman-Rogers, Stanage Park, Brampton Bryan.
Percy Crutchley, Sunninghill Lodge, Ascot, Berkshire.
The Earl of Derby, K.G., Knowsley, Prescot, Lancashire.
R. M. Greaves, Wern, Portmadoc, North Wales.
Lord Harlech, Brogyntyn, Oswestry.
Ernest Mathews, C.V.O., LL.D., Little Shardeloes, Amersham, Bucks.
The Duke of Portland, K.G., Welbeck Abbey, Worksop.
The Earl of Powis, Powis Castle, Welshpool, Mont.
Frederick Reynard, Sunderlandwick, Driffield, Yorkshire.
The Duke of Richmond and Gordon, K.G., Goodwood, Chichester.
Lieut-Col. E. W. Stanyforth, Kirk Hammerton Hall, York.
The Earl of Yarborough, Brocklesby Park, Lincolnshire.

Election of Auditors.

It was then moved by Mr. J. J. CRIDLAN, seconded by Mr. F. L. GOOCH, and unanimously resolved :—"That the best thanks of the Society be tendered to Messrs. Jonas M. Webb, Hubert J. Greenwood and Newell P. Squarey for their services as auditors, and that they be re-elected for the ensuing year."

Elections to the Council.

In accordance with By-law 87, the PRESIDENT reported the names of the following ordinary members of Council who had been elected to represent the several divisions of the Society included in Group B, so that the meeting might "take cognizance" of their election :—

Durham : Christopher Middleton, Vane Terrace, Darlington.
Yorks, W. Riding (two representatives) : Lt.-Col. George R. Lane-Fox, M.P., Bramham Park, Boston Spa ; C. Howard Taylor, Middlewood Hall, Barnsley.
Nottingham : John Bell, Wollaton, Nottingham.
Leicester : Sir Arthur G. Hazlerigg, Bart., Noseley Hall, Leicester.
Rutland : E. Guy Fenwick, North Luffenham Hall, Stamford.
Suffolk (two representatives) : Fred Smith, Deben Haugh, Woodbridge ; S. R. Sherwood, Playford, Ipswich.
Buckingham : B. J. Gates, Wing Park, Leighton Buzzard.
Essex (two representatives) : Sir Walter Gilbey, Bart., Elsenham Hall, Elsenham ; The Hon. Edward G. Strutt, C.H., Whitelands, Hatfield Peverel.
London (three representatives) : W. W. Chapman, 4 Mowbray House, Norfolk Street, W.C.2 ; Frank P. Matthews, 27 Cavendish Square, W.1 ; F. Hamlyn Price, 7 Harley Gardens, S.W.10.
Shropshire (two representatives) : Alfred Mansell, College Hill, Shrewsbury. (One vacancy to be filled owing to Lord Harlech's election as Vice-President.)
Hereford : Arthur P. Turner, Fayre Oakes, Hereford.
South Wales : Col. C. Venables Llewelyn, Llysdinam, Newbridge-on-Wye.
Devon : Lord Mildmay of Flete, Flete, Ivybridge.
Wiltshire : Daniel Combes, Dinton Manor, Salisbury.
Surrey : Major Dunbar Kelly, D.S.O., Godinton, Ashford, Kent.

Under By-law 83, the Rev. C. H. Brocklebank, of Bartlow House, near Cambridge, has also been elected as an additional representative on the Council for the Division of Cambridgeshire.

Members' Suggestions.

The PRESIDENT having inquired if any Governor or Member had any remark to make or suggestion to offer for the consideration of the Council,

Mr. HENRY BRIDGMAN (Downend, Bristol) said he had one suggestion to put forward, and that was that the Competitions for Farms, which used to be held by the Society, should be started again. He had himself won a prize for his farm some years ago, and he was more proud of that than anything. In his opinion, one could have no greater ambition than to win one of the farm prizes of the Royal Agricultural Society.

Thanks to the Retiring President.

Lord HARLECH said it gave him the greatest pleasure to rise and propose a very hearty vote of thanks to His Royal Highness the Duke of York, their retiring President. They on that Council appreciated most highly the very active part His Royal Highness had taken in their proceedings and also the intelligent interest he had shown in them. He hoped that as a Trustee His Royal Highness would continue to take that interest for many years to come, and that whenever he could spare the time he would come and take part in their discussions. His lordship was sure that His Royal Highness would always receive a hearty welcome whenever he came to Bedford Square. He had the greatest pleasure in proposing a vote of thanks to His Royal Highness.

Lord BLEDISLOE said he had been much honoured in being asked to second this vote of thanks. The Presidency of His Royal Highness had been no mere formality. He had been, as probably those present were aware, most assiduous in his presidential duties and also in attending the Royal Show at Cambridge. His Royal Highness had said that many thousands of visitors were kept away on account of the weather, but his

Lordship thought it would be equally true to say that the presence of His Royal Highness at Cambridge had brought many thousands to the Show —(applause)—and enabled what was an exceptionally fine exhibition to be a financial success. Agriculture, like the Cambridge Show, was very much under the weather at the present time, but he ventured to hope and believe that the sympathetic and active interest of His Majesty the King and other members of the Royal House would carry them a long way in enabling them to face and survive the storm.

The resolution was then put to the meeting and enthusiastically carried.

H.R.H. the DUKE OF YORK, in acknowledging the vote, said: "I am deeply grateful to Lord Harlech and to Lord Bledisloe for their very generous words in moving this last resolution. I can only say how much I have enjoyed my year of office as President. I am sure that I have learnt a lot about agriculture, and I can assure you that I shall always follow the doings of this Society with very much interest. If I can do anything to further its interests it will always be a great pleasure to me. I thank you again very much." (Applause.)

The proceedings then terminated.

Royal Agricultural Society of England.

AWARDS OF PRIZES AT CAMBRIDGE, 1922.

ABBREVIATIONS.

I., First Prize. II., Second Prize. III., Third Prize. IV., Fourth Prize. V., Fifth Prize. R.N., Reserve Number. H.C., Highly Commended. C., Commended.

The responsibility for the accuracy of the description or pedigree, and for the eligibility to compete of the animals entered in the following classes, rests solely with the Exhibitors.

Unless otherwise stated, each Prize Animal in the Classes for Horses, Cattle, Goats, Sheep, and Pigs, was "bred by Exhibitor."

HORSES.

Shires.

No. in Cata-ogue.

Class 1.—*Shire Stallions, born in* 1921.[1]

8 **I. (£20.)**—SIR BERNARD GREENWELL, BT., Marden Park, Woldingham, Surrey, for **Normanby Menestrel**, bay, bred by Sir Berkeley Sheffield, Bt., Normanby Park, Doncaster; *s.* Hawton Commander 36626, *d.* Normanby Rosebud 61339 *by* Norbury Menestrel 23543.

2 **II. (£10.)**—J. MORRIS BELCHER, Tibberton Manor, Newport, Salop, for **Tibberton Leader**, bay; *s.* Pendley Leader 35071, *d.* Tibberton Secundus Queen 90699 *by* Babingley Nulli Secundus 26993.

10 **III. (£5.)**—F. W. GRIFFIN, Boro' Fen, Peterborough, for **Boro' Surprise**, bay, bred by J. Whitsed, Boro' Fen, Peterborough; *s.* Rowington Recruit 35145, *d.* Hemington Princess 74754 *by* Prospect Prince Albert 21772.

3 **R. N.**—H. W. BISHOP and J. W. MEASURES, Pendley Stock Farms, Tring, for **Pendley Goldmine.**

H. C.—1, 6, 12.

Class 2.—*Shire Stallions, born in* 1920.

19 **I. (£20, & R. N. for Champion.[2])**—J. MORRIS BELCHER, Tibberton Manor, Newport, Salop, for **Tibberton Blood Royal** 38580, bay, bred by E. J. Knobbs, Leigh, Stoke-on-Trent; *s.* Blood Royal 2nd 33733, *d.* Baroness 101183 *by* Pethills Forest Prince 28665.

29 **II. (£10.)**—E. SAVAGE, The Old Hall, Groby, Leicester, for **Lunesdale Banker** 38369, bay, bred by William Taylor & Sons, Launds Farm, Hornby, Lancaster; *s.* Langrick Duke 33310, *d.* Hornby Belle 93672 *by* Kingsley 30591.

18 **III. (£5.)**—J. H. APPLEBY & SONS, Stud Farm, Tixall, Stafford, for **Bradgate Viscount** 38054, brown, bred by C. W. Kellock, Audlem, Cheshire; *s.* Audlem Royalist 32986, *d.* Audlem Encore 80259 *by* Eaton Nunsuch 27301.

27 **R. N.**—JOHN MEASURES, Dunsby Hall, Bourne, Lincs., for **Lincoln Martian.**

H. C.—23, 25. **C.**—20, 22, 28.

Class 3.—*Shire Stallions, born in* 1919.

38 **I. (£20, & Champion.[2])**—JAMES GOULD, Crouchley Hall, Lymm, Cheshire, for **Herontye Buscot** 37494, brown, bred by Andrew Devitt, Herontye, Sussex; *s.* Champion's Goalkeeper 30296, *d.* Buttington Bluebell 80784 *by* Kempston Buscot 21565.

41 **II. (£10.)**—THOMAS JACKSON, Stud Farm, Shustoke, Birmingham, for **Anstey Forest Maximum** 37075, brown, bred by the late A. Nield, Packington, Ashby-de-la-Zouch; *s.* Sundridge Coming King 33568, *d.* Culland Bounce 88070 *by* Moors Lion 27595.

36 **III. (£5.)**—A. H. CLARK & SON, Moulton Eaugate, Spalding, for **Moulton Bank Manager** 37688, brown, bred by C. A. Banks, Fulney, Spalding; *s.* Warton Draughtsman 27895, *d.* Bonny 101614 *by* McRobert 2nd 32567.

37 **R. N.**—THOMAS EWART, Dunsmore Stud Farm, Rugby, for **Dunsmore Special.**

H. C.—39, 44. **C.**—33, 34, 43.

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[1] Prizes given by the Shire Horse Society.

[2] Champion Gold Medal, and £5 to the Reserve, given by the Shire Horse Society for the best Stallion in Classes 1 to 3. A Prize of £5 is also given by the Shire Horse Society to the Breeder of the Champion Stallion, provided the Breeder is a Member of the Shire Horse Society, and the Dam of the animal is registered in the Shire Horse Stud Book.

Class 4.—*Shire Fillies, born in* 1921.[1]

52 **I. (£20, & R. N. for Champion.[2])**—Sir Arthur Nicholson, Highfield Hall, Leek, Staffs, for **Leek Pearl,** brown; *s.* Champion's Goalkeeper 30296, *d.* Leek Destiny 85505 *by* Coronation 7th 29263.

46 **II. (£10.)**—The Ashby Folville Stud, Ashby Folville, Melton Mowbray, for **Folville Empress,** brown, bred by A. M. Green, Brentingby, Melton Mowbray; *s.* Monks Green Friar 35801, *d.* Colney Alberta 80953 *by* King of Tandridge 24351.

55 **III. (£5.)**—D. K. Steadman, The Maesydd, Pool Quay, Welshpool, for **Mallwyd Pride,** brown, bred by T. Wannop, Knowlend, Audley, Newcastle, Staffs.; *s.* Harboro' Nulli Secundus 33231, *d.* Knowlend Princess Tandridge 93947 *by* King of Tandridge 24351.

47 **R. N.**—A. H. Clark & Son, Moulton Eaugate, Spalding, for **Moulton Abbot's Fancy.**
H.C.—56. **C.**—45.

Class 5.—*Shire Fillies, born in* 1920.

58 **I. (£20.)**—J. H. Appleby & Sons, Stud Farm, Tixall, Stafford, for **Bradgate Sheba** 107197, bay; *s.* Pendley Leader 35071, *d.* Clumber Sheba 59862 *by* Royal Derby 16933.

61 **II. (£10.)**—A. H. Clark & Son, Moulton Eaugate, Spalding, for **Moulton Messenger's Princess** 109180, bay; *s.* King's Messenger 31562, *d.* Moulton Victor's Duchess 82387 *by* Moulton Victor King 28590.

64 **III. (£5.)**—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge, for **Torrells Princess Rose** 110328, bay, bred by the late J. Carson, Manor House, King's Sutton, Banbury; *s.* Crossmoor Prince Forester 33858, *d.* Harlow Rose 93476 *by* Coleshill Forester 24149.

62 **R. N.**—The Duke of Devonshire, K.G., Chatsworth, Bakewell, for **Chatsworth Maud.**
H. C.—59, 60, 66.

Class 7.—*Shire Mares, born in or after* 1918, *with Foals at foot.*

79 **I. (£20, & Champion.[2])**—Sir Arthur Nicholson, Highfield Hall, Leek, Staffs., for **Leek Queen** 98929, bay, born in 1918; *s.* Champion's Clansman 29221, *d.* Roycroft Forest Queen 75832 *by* Ratcliffe Forest King 23622. [Foal *by* Pendley Footprint 37728.]

77 **II (£10.)**—F. W. Griffin, Boro, Fen, Peterborough, for **Boro' Graceful** 97104, dark bay, born in 1918, bred by John Vaughan, The Moors, Welshpool; *s.* Moors Kitchener 25443, *d.* Moors Choice 78901 *by* Childwick Champion 22215. [Foal *by* Rowington Recruit 35145.]

80 **III. (£5.)**—Thomas Simpson, Haynes, Bedford, for **Pendley Woodlark** 99588, bay, born in 1918, bred by T. A. Howse, Crompton Chaulden Farm, Boxmoor; *s.* Childwick Champion 22215, *d.* Rowington Woodlark 79377 *by* Woodreeve 24772. [Foal *by* Wootton Coronation 35323.]

75 **R. N.**—G. R. C. Foster, Anstey Hall. Trumpington, Cambridge, for **Knapthorpe Princess.**
H. C.—74.

Class 8.—*Shire Mares, born in or before* 1917, *with Foals at foot.*

86 **I. (£20.)**—J. H. Appleby & Sons, Stud Farm, Tixall, Stafford, for **Bridgford Briar Queen** 101841, bay, born in 1917, bred by H. Hidderley, Creswell Farm, Stafford; *s.* Normanby Briar King 32672, *d.* Bridgford Queen of the Forest 84130 *by* Ivy Forest Chief 23390. [Foal *by* Rowington Recruit 35145.]

104 **II. (£10.)**—Owen Williams, Crossways, Cowbridge, for **Torrells Bohemian Girl** 96026, bay, born in 1917, bred by the late J. Carson, Torrells Hall, Willingale, Ongar; *s.* Sandside Sensation 33518, *d.* Norbury Bohemian Girl 75448 *by* Dowsby Forest King 27253. [Foal *by* Herontye Goalkeeper 37496.]

93 **III. (£5.)**—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge, for **Claypole Dray Queen** 80920, brown, born in 1914, bred by L. Atkinson, Postland, Peterborough; *s.* Goadby Drayman 27367 *d.* Thrapston Empress 72732 *by* Gaer Conqueror 25218. [Foal *by* March King 34955.]

89 **R. N.**—A. H. Clark & Son, Moulton Eaugate, Spalding, for **Moulton Victor's Queen.**
H. C.—90, 99. **C.**—97, 98, 100.

Class 9.—*Shire Colt Foals, the produce of Mares entered in Class* 7 *or* 8.[1]

105 **I. (£10.)**—J. H. Appleby & Sons, Stud Farm, Tixall, Stafford, for bay, born April 24; *s.* Rowington Recruit 35145, *d.* Bridgford Briar Queen 101841 *by* Normanby Briar King 32672.

109 **II. (£5.)**—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge, for bay, born March 1; *s.* King Norbury 35761, *d.* Hag Star 98423 *by* Alfred of Sundridge 32972.

116 **III. (£3.)**—Sir Arthur Nicholson, Highfield Hall, Leek, Staffs, for brown, born February 14; *s.* Pendley Footprint 37728, *d.* Leek Queen 98929 *by* Champion's Clansman 29221.

110 **R. N.**—G. R. C. Foster, for bay.
H. C.—108, 112, 114. **C.**—117.

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[1] Prizes given by the Shire Horse Society.

[2] Champion Gold Medal, and £5 to the Reserve, given by the Shire Horse Society for the best Mare or Filly in Classes 4 to 8. A Prize of £5 is also given by the Shire Horse Society to the Breeder of the Champion Mare or Filly, provided the Breeder is a Member of the Shire Horse Society, and the Dam of the animal is registered in the Shire Horse Stud Book.

Class 10.—*Shire Filly Foals, the produce of Mares entered in Class* 7 *or* 8.[1]

123 I. (£10.)—THE DUKE OF DEVONSHIRE, K.G., Chatsworth, Bakewell, for bay, born April 12; *s.* Field Marshal 5th 35627, *d.* Chatsworth Marian 84311 *by* Friar Tuck 4th 31447.

127 II. (£5.)—GEORGE LOCKLEY, Summerhill Farm, Whitgreave, Stafford, for bay, born March 27; *s.* Pendley Leader 35071, *d.* Ranton Heiress 95113 *by* Ranton Forest King 32749.

124 III. (£3.)—G. R. C. FOSTER, Anstey Hall, Trumpington, Cambridge, for bay, born May 10; *s.* March King 34955, *d.* Claypole Dray Queen 80920 *by* Goadby Drayman 27367.

119 R. N.—OWEN WILLIAMS, Crossways, Cowbridge.

H. C.—129.

Class 11.—*Shire Geldings (by registered sires) born in or before* 1919.[1]

137 I. (£20.)—B. A. CLEMINSON, Rawcliffe Manor, Skelton Road, York, for **Elma Darkie**, black, born in 1917, bred by George Kendrew, Elm House, Northallerton; *s.* Lincoln Dray King 31590, *d.* Neasham Forest Maid 61301 *by* Ivy Forest Chief 23390.

156 II. (£10.)—W. T. ROBERTS, 83, Bedford Street South, Liverpool, for **Rags**, bay, born in 1918, bred by F. W. Griffin, Boro' Fen, Peterborough; *s.* Boro' Future King 33045, *d.* Boro' Rosebriar 77120 *by* Bridge Sollars Jupiter 27127.

155 III. (£5.)—GEORGE G. MARSH, Mount Pleasant, Liverpool, Speke, for **Prince**, brown, born in 1918. bred by Mrs. Nield, Manor House, Packington, Ashby-de-la-Zouch; *s.* Sussex Masterpiece 32848, *d.* Culland Jewel 88072 *by* Brailsford All We Want 25973.

157 R. N.—THOMAS SIMPSON, Haynes, Bedford, for **Sir Robert.**

H. C.—135, 140, 142, 146, 149. C.—145, 151.

Clydesdales.

Class 12.—*Clydesdale Stallions, born in* 1921.[2]

162 I. (£20, & Champion.[3])—JAMES KILPATRICK, Craigie Mains, Kilmarnock, for **Craigie McQuaid**, brown, bred by McQuaid Bros., Drumjargon; *s.* Bonnie Buchlyvie 14032, *d.* Queen Elizabeth 41476 *by* Everlasting 11331.

166 II. (£10.)—ANDREW M. MONTGOMERY, Nether Hall, Castle Douglas, for **St. Louis**, bay, bred by James Hall, Cranna, Rothie Norman; *s.* Carry On 19655, *d.* Anita 47888 *by* Baron's Stamp 17100.

159 III. (£5.)—DAVID ADAMS, Auchencraig, Dumbarton, for bay, bred by John P. Sleigh, St. John's Wells, Fyvie; *s.* Dunure Footprint 15203, *d.* Wells Mascal 49008 *by* Hillhead Chief 10774.

161 R. N.—JAMES GRAY, Birkenwood, Kippen Station.

Class 13.—*Clydesdale Stallions, born in* 1920.

169 I. (£20, & R. N. for Champion.[3])—ALBERT JAMES MARSHALL, Bridgebank, Stranraer, for **Bridgebank Morning Star** 20515, black; *s.* The Dunure 16839, *d.* Miss McAllister 50860 *by* Dunure Footprint 15203.

171 II. (£10.)—ANDREW M. MONTGOMERY, Nether Hall, Castle Douglas, for **R.I.C.** 20638, bay, bred by J. and R. Cocker, Hill of Petty, Fyvie; *s.* Hiawatha Again 18765, *d.* Lorna 40640 *by* Baron Ideal 14585.

168 III. (£5.)—JAMES KILPATRICK, JUN., Hawkrigg House, Wigton, for **Hawkrigg Evergreen** 20589, bay, bred by Dr. Kelso, Hawthorn Bank, Broxburn; *s.* Bonnie Buchlyvie 14032, *d.* Lady Allandale 43320 *by* Allandale 12418.

172 R. N.—DOUGLAS D. MURRAY, The Dene, Seaham Harbour, for **Seaham Ringleader.**

Class 14.—*Clydesdale Stallions, born in* 1919.

173 I. (£20.)—CHARLES AITKENHEAD, Carr House Farm, New Seaham, Co. Durham, for **Elford** 20334, black, bred by R. J. Eldon Elford, Chathill; *s.* Dunure Footprint 15203, *d.* Elford Lady Mary 50111 *by* Scotland's Favourite 16808.

175 II. (£10.)—ANDREW M. MONTGOMERY, Nether Hall, Castle Douglas, for **Dunure Exactly.** 20313, black bred by William Dunlop, Dunure Mains, Ayr; *s.* Dunure Independence 18706, *d.* Sarcelle 26861 *by* Everlasting 11331.

Class 15.—*Clydesdale Fillies, born in* 1921.

181 I. (£20, & Champion.[4])—DOUGLAS D. MURRAY, The Dene, Seaham Harbour, for **Queen o' the Law**, dark brown; *s.* Craigie Litigant 19071, *d.* Queen o' the Ring 46008 *by* Dunure Footprint 15203.

180 II. (£10.)—JAMES KILPATRICK, Craigie Mains, Kilmarnock, for bay, bred by Thomas Millar, Burnbank. Symington; *s.* Craigie Litigant 19071, *d.* Burnbank Forest Queen *by* Craigie Hallmark 18667.

179 III. (£5.)—J. E. KERR, Harviestoun Castle, Dollar, for **Harviestoun Florence**, black; *s.* Dunure Footprint 15203, *d.* Fiona 43334 *by* Royal Favourite 10630.

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[1] Prizes given by the Shire Horse Society.

[2] Prizes given by the Clydesdale Horse Society.

[3] Champion Silver Medal given by the Clydesdale Horse Society for the best Stallion in Classes 12–14.

[4] Champion Silver Medal given by the Clydesdale Horse Society for the best Mare or Filly in Classes 15–17.

Class 16.—*Clydesdale Fillies, born in* 1920.

185 **I. (£20.)**—Alexander Murdoch, East Hallside, Hallside, Glasgow, for **Ophelia**, black, bred by Alexander Maxwell, Warrix, Irvine; *s.* Craigie Litigant 19071, *d.* Warrix Gipsy Maid 50894 *by* Dunure Footprint 15203.

182 **II. (£10.)**—David Adams, Auchencraig, Dumbarton, for **Kate**, bay, bred by James Steven, Cawdercuilt, Maryhill; *s.* Dunure Expression 19103, *d.* Alice 53053 *by* Baron Dollar 15133.

186 **III. (£5.)**—Douglas D. Murray, The Dene, Seaham Harbour, for **Seaham Osprey**, brown; *s.* Dunure Footprint 15203, *d.* Silver Blossom 42888 *by* Hiawatha 10067.

184 **R. N.**—James Kilpatrick, Craigie Mains, Kilmarnock, for **Craigie Fairmaid.**

Class 17.—*Clydesdale Fillies, born in* 1919.

188 **I. (£20, & R. N. for Champion.[1])**—J. E. Kerr, Harviestoun Castle, Dollar, for **Harviestoun Princess**, brown; *s.* Dunure Footprint 15203, *d.* Harviestoun Phyllis 37631 *by* Royal Favourite 10630.

189 **II. (£10.)**—James Kilpatrick, Craigie Mains, Kilmarnock, for **Craigie Mermaid**, bay, bred by James Sloan, Dormieston, Tarbolton; *s.* Craigie Litigant 19071, *d.* Maud Mariner 46466 *by* Montrave Mariner 17393.

187 **III. (£5.)**—Charles Aitkenhead, Carr House Farm, New Seaham, Co. Durham, for **Boquhan Electra**, bay, bred by the late Stephen Mitchell, Boquhan, Kippen; *s.* Apukwa, 14567, *d.* Boquhan Heather 48548 *by* Baron of Buchlyvie 11263.

Class 18.—*Clydesdale Geldings (by registered sires), born in or before* 1919.[2]

200 **I. (£20.)**—Scottish Co-operative Wholesale Society, Ltd., 95, Morrison Street, Glasgow, for **Jim Scott**, brown, born in 1918, bred by James Scott, Ascurry, Forfar; *s.* Carbrook Buchlyvie 18273.

196 **II. (£10.)**—James Kilpatrick, Craigie Mains, Kilmarnock, for **Willie**, black, born in 1914, bred by John Cooper, Muchalls, Stonehaven; *s.* Dunedin 12951.

195 **III. (£5.)**—James Fleming, Barns of Claverhouse, Dundee, for bay, born in 1918, bred by George McConachie, Lower Auchmill, Kinnoir, Rothiemay; *s.* Parona 18481.

202 **R. N.**—Scottish Co-operative Wholesale Society, Ltd., for **Top Line.**

H. C.—192, 197.

Suffolks.

Class 19.—*Suffolk Stallions, born in* 1921.[3]

205 **I. (£20.)**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Banker** 5335, bred by the late Lord Manton; *s.* Sudbourne Beau Brocade 4235, *d.* Bawdsey Posy 8910 *by* Bawdsey Sickleman 4023.

207 **II. (£10.)**—The Exors. of the late Lord Manton, for **Sudbourne Basil** 5332, bred by the late Lord Manton; *s.* Sudbourne Beau Brocade 4235, *d.* Selina 9323 *by* Angus 4435.

209 **III. (£5.)**—T. W. Wilson & Sons, Ltd., Hadleigh, Suffolk, for **Hadleigh Count** 5380; *s.* Sudbourne Bellum 4631, *d.* Countess 9262 *by* Morston Wallace 3987.

203 **R N.**—F. Claude Branwhite, The Hall, West Bergholt, Colchester, for **Bergholt Gunsmith.**

H. C.—210.

Class 20.—*Suffolk Stallions, born in* 1920.

215 **I. (£20.)**—Arthur T. Pratt, Morston Hall, Trimley, Ipswich, for **Horstead Punchinello** 5096, bred by Mrs. G. C. Neville, Horstead Hall, Norwich; *s.* Sudbourne Beau Brocade 4235, *d.* Nimble 8767 *by* Cicero 4135.

214 **II. (£10.)**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Culpho Chieftain** 5151, bred by G. P. Watkins, Culpho Hall, Ipswich; *s.* Sudbourne Beauchief 4215, *d.* Sunshine Moggy 5842 *by* Sunshine 2734.

219 **III. (£5.)**—William Woodgate, Fairfield, Framlingham, for **Blackmore Hopeful** 5206, bred by J. H. Hull, Jericho, Ingatestone; *s.* Bawdsey Sickleman 4023, *d.* Grange Mermaid 8995 *by* Sudbourne Arabi 3287.

211 **R. N.**—Samuel FitzRoy, Hawstead Lodge, Bury St. Edmunds, for **Sudbourne Bandolier.**

H. C.—212.

Class 21.—*Suffolk Stallions, born in* 1919.

222 **I. (£20, & Champion.[4])**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Premier** 4963, bred by the late Lord Manton; *s.* Sudbourne Beau Brocade 4235, *d.* Sudbourne Moonlight 8623 *by* Sudbourne Peter 3955.

220 **II. (£10.)**—James Forrest, Tattingstone Hall, Ipswich, for **Tattingstone Beau Esprit** 4927; *s.* Sudbourne Beauchief 4215, *d.* Tattingstone Omen 8339 *by* Decider 3995.

221 **III. (£5.)**—William Gough, Fornham All Saints, Bury St. Edmunds, for **Fornham Beatty** 4942; *s.* Sudbourne Beau Brocade 4235, *d.* Fornham Beatrice 6732 *by* Sudbourne Arab 3309.

227 **R. N.**—Windsor D. Parker, Clopton Hall, Woolpit, Suffolk, for **Darsham Bellboy.**

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[1] Champion Silver Medal given by the Clydesdale Horse Society for the best Mare or Filly in Classes 15–17.

[2] Prizes given by the Clydesdale Horse Society.

[3] Prizes given by the Suffolk Horse Society.

[4] The "Corporation" Silver Challenge Cup, value £50, given for annual competition by the Suffolk Horse Society for the best Stallion in Classes 19–22.

Class 22.—*Suffolk Stallions, born in or before* 1918.[1]

237 **I. (£20, & R. N. for Champion.[2])**—Arthur T. Pratt, Morston Hall, Trimley, Ipswich for **Morston Connaught** 4590, born in 1914, bred by W. H. Allen, Harkstead Hall, Ipswich; *s.* Orwell Decider 4431, *d.* Ewarton Derby 5661 *by* Bentley Warrior 2898.

234 **II. (£10.)**—A. Preston Jones, Mickleover House, Derby, for **Freston Khedive** 4486, born in 1915, bred by John Sherwood, Ipswich; *s.* Sudbourne Arabi 3287, *d.* Ruby 7341 *by* Sproughton Gold Ring 3347.

235 **III. (£5.)**—Edward W. Long, Fakenham, Norfolk, for **Horstead Vanguard** 4784, born in 1918, bred by the Exors. of the late A. M. Threadkell, Dallinghoo, Wickham Market; *s.* Morston Gold Guard 4234, *d.* Tattingstone Maisie 7597 *by* Bawdsey Harvester 3076.

233 **R. N.**—William Gough, Fornham All Saints, Bury St. Edmunds, for **Fornham Rifleman.**
H.C.—231.

Class 23.—*Suffolk Fillies, born in* 1921.[1]

244 **I. (£20.)**—Sir Cuthbert Quilter, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Sappho** 11350; *s.* Earl Gray 4219, *d.* Bawdsey Minerva 6449 *by* Bawdsey Harvester 3076.

247 **II. (£10.)**—E. S. Tomlinson, North Rauceby, Sleaford, for **Rauceby Dorothy** 11626; *s.* Henham Aerolite 4343, *d.* Rougham Dolly 8584 *by* Blackbourn Dragon 4070.

245 **III. (£5.)**—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Ashmoor Aquilegia** 11318; *s.* Bawdsey Hay 4188, *d.* Ashmoor Anemone 8903 *by* Sudbourne Arab 3309.
H. C.—243. **C.**—246.

Class 24.—*Suffolk Fillies, born in* 1920.

257 **I. (£20.)**—Sir Cuthbert Quilter, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Peeress** 10810; *s.* Earl Gray 4219, *d.* Bawdsey Duchess 7490 *by* Bawdsey Harvester 3076.

260 **II. (£10.)**—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Ashmoor Aconite** 10922; *s.* Bawdsey Hay 4188, *d.* Ashmoor Anemone 8903 *by* Sudbourne Arab 3309.

262 **III. (£5.)**—A. G. Welch, Worlingham, Beccles, for **Sudbourne Aura** 10162, bred by the late Lord Manton, Sudbourne Hall, Orford; *s.* Sudbourne Beau Brocade 4235, *d.* Sudbourne Armada 8519 *by* Sudbourne Peter 3953.

258 **R. N.**—Sir Cuthbert Quilter, Bt., for **Bawdsey Pledge.**
H. C.—248, 251, 252. **C.**—255.

Class 25.—*Suffolk Fillies, born in* 1919.

268 **I. (£20, & Champion.[3])**—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Ashmoor Bessie** 10367; *s.* Sudbourne Arab 3309, *d.* Ashmoor Belle *by* Taylor's Majestic 3327.

267 **II. (£10.)**—Sir Cuthbert Quilter, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Porcelain** 10404; *s.* Earl Gray 4219, *d.* Bawdsey China Doll 2nd 7252 *by* Bentley War Cry 3028.

264 **III. (£5.)**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Ringshall Cavell** 10080, bred by W. C. Hitchcock, Ringshall, Stowmarket; *s.* Freston Marshal 4420, *d.* Skipper 8015 *by* Weston Victory 2963.

269 **R. N.**—A. G. Welch, Worlingham, Beccles, for **Worlingham Star.**
H. C.—270. **C.**—263, 266.

Class 26.—*Suffolk Mares, born in or after* 1917, *with Foals at foot.*[4]

279 **I. (£20, & R.N. for Champion.[2])**—Sir Cuthbert Quilter, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Hayseed** 9496, born in 1917; *s.* Bawdsey Hay 4188, *d.* Cliff Blossom 6180 *by* Boulge Conqueror 2667. [Foal *by* Framlingham Allenby 4826.]

275 **II. (£10.)**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Ashmoor Bellona** 9448, born in 1917, bred by A. Carlyle Smith, Sutton Hall, Woodbridge; *s.* Sudbourne Arab, 3309, *d.* Ashmoor Belle *by* Taylor's Majestic 3327. [Foal *by* Sudbourne Beau Brocade 4235.]

278 **III. (£5.)**—Saxton W. A. Noble, Wretham Hall, Thetford, for **Cherry** 9555, born in 1917, bred by Cordy S. Wolton, Lavenham Hall; *s.* Clarion 3663, *d.* Aldringham Christabel 7450 *by* Smith's Redwald 3346. [Foal *by* Mendham Gold Boy 4225.]

280 **R. N.**—J. T. Thistleton Smith, Pudding Norton Hall, Fakenham, for **Framlingham Chic.**
H. C.—274. **C.**—277.

Class 27.—*Suffolk Mares, born in or before* 1916, *with Foals at foot.*

284 **I. (£20.)**—Sir Cuthbert Quilter, Bt., Bawdsey Manor, Woodbridge, for **Bawdsey Juno** 8911, born in 1916; *s.* Bawdsey Harvest King 3879, *d.* Sutton Venus 5693 *by* Hewitt's Mars 2434. [Foal *by* Framlingham Allenby 4826.]

282 **II. (£10.)**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Bawdsey Cleopatra** 8636, born in 1915, bred by Sir Cuthbert Quilter, Bt., Bawdsey Manor, Woodbridge; *s.* Sudbourne Arabi 3287, *d.* Bawdsey Empress 7017 *by* Bawdsey Harvester 3076. [Foal *by* Sudbourne Beau Brocade 4235.]

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[1] Prizes given by the Suffolk Horse Society.

[2] The "Corporation" Silver Challenge Cup, value £50, given for annual competition by the Suffolk Horse Society for the best Stallion in Classes 19–22.

[3] Champion Prize of £10 given by the Suffolk Horse Society for the best Mare or Filly in Classes 23-27.

[4] Prizes given by the Suffolk Agricultural Association, through the Cambridge Local Committee.

286 III. (£5.)—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Ashmoor Anemone** 8903, born in 1916; *s.* Sudbourne Arab 3309, *d.* Violet 5082 *by* Cook's Ironside 2759. [Foal *by* Bawdsey Hay 4188.]

281 R. N.—Herbert W. Daking, White Hall, Thorpe-le-Soken, for **Morston Millicent.**
H. C.—285. C.—283, 287.

Class 28.—*Suffolk Colt Foals, the produce of Mares in Classes* 26 *or* 27.[1]

291 I. (£20.)—Sir Cuthbert Quilter, Bt., Bawdsey Manor, Woodbridge, for colt born March 1; *s.* Framlingham Allenby 4826, *d.* Bawdsey Hayseed 9496 *by* Bawdsey Hay 4188.

292 II. (£5.)—Sir Cuthbert Quilter, Bt., for colt born February 24; *s.* Framlingham Allenby 4826, *d.* Bawdsey Juno 8911 *by* Bawdsey Harvest King 3879

293 III. (£3.)—S. and H. Scrimgeour, Blyford Hall, Halesworth, Suffolk, for colt born March 11; *s.* Sudbourne Beau Brocade 4235, *d.* Blyford Searchlight 8407 *by* Smith's Saturn 2653.

290 R. N.—Saxton W. A. Noble, Wretham Hall, Thetford.
H. C.—294.

Class 29.—*Suffolk Filly Foals, the produce of Mares in Classes* 26 *or* 27.[2]

296 I. (£10.)—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for filly born January 10, bred by the late Lord Manton; *s.* Sudbourne Beau Brocade 4235, *d.* Ashmoor Bellona 9448 *by* Sudbourne Arab 3309.

299 II. (£5.)—J. T. Thistleton Smith, Pudding Norton Hall, Fakenham, for filly born March 21; *s.* Knight Errant 4523, *d.* Framlingham Chic 9520 *by* Framlingham Favour 4292.

295 III. (£3.)—Frank J. Cullen, Cressing Temple, Braintree, Essex, for filly born April 9; *s.* Bawdsey Sickleman 4023, *d.* Kitten 10356 *by* Woolverstone Checkmate 4683.

300 R. N.—J. T. Thistleton Smith.

Class 30.—*Suffolk Geldings, by registered sires, born in or before* 1919.[1]

303 I. (£20.)—Bertram P. French, Debach House, Woodbridge, for **Major,** born in 1915, bred by W. Woodgate, Framlingham; *s.* Badingham Upstart 3847, *d.* Badingham Diamond 6553 *by* Fornham Cornet 3371.

306 II. (£10.)—Arthur T. Pratt, Morston Hall, Trimley, Ipswich, for **Proctor,** born in 1916, bred by S. Dawson, Stratton Hall, Ipswich; *s.* Morston Gold Guard 4234, *d.* Stratton Brisk 5394 *by* Homocea 2634.

304 R. N.—William Gough, Fornham All Saints, Bury St. Edmunds, for **Fornham Pax.**
H. C.—307, 308. C.—301.

Percherons.[3]

Class 31.—*Percheron Colts or Fillies, born in* 1921.

317 I. (£20.)—Lt.-Col. David Davies, M.P., Broneirion, Llandinam, Mont., for **Dinam Espoir,** dark grey colt; *s.* Prescient 126226, *d.* Nature B 66 *by* Jorat F 85748.

324 II. (£10.)—Henry R. Overman, Brampton Ash, Market Harborough, for **Brampton Eve** B 431, dark grey filly; *s.* Lagor B. 1., *d.* Irene B 23 *by* Clamarz F 64207.

323 III. (£5.)—Henry R. Overman, for **Brampton Eunice** B 430, grey filly; *s.* Lagor B 1, *d.* Nodale B 22 *by* Joinville F 88611.

321 R. N.—Aubrey W. Handy, Haycroft, Sherborne, Northleach, for **River Varunda.**
H. C.—322. C.—311, 314, 320.

Class 32.—*Percheron Stallions, born in* 1919 *or* 1920.

338 I. (£20.)—Henry Overman, Kipton House, Weasenham, King's Lynn, for **Bargaly Chieftain** B 16, grey, born in 1919, bred by Col. John McKie, D.S.O., Castle Douglas; *s.* Misanthrope B 5, *d.* Quercia B 63 *by* Fier-a-Bras F. 65250.

340 II. (£10.)—F. W. D. Robinson, Roos Hall, Beccles, for **Brampton Chanticleer** B 25, dark grey, born in 1919, bred by Henry R. Overman, Brampton Ash, Market Harborough; *s.* Misanthrope B 5, *d.* Oleandre B 17 *by* Kaptif F 92909.

331 III. (£5, & Champion.[4])—Mrs. Robert Emmet, Moreton Paddox, Moreton Morrell, Warwick, for **Greyling Unique** B 71, grey, born in 1920; *s.* Nonius B 4, *d.* Quasquette B 5 *by* Lagor F 100512.

335 R. N. & R. N. for Champion.[4]—The Hache Stud, Bulstrode, Gerrards Cross, Bucks. for **Hache Umslopagaas.**
H. C.—337. C.—332, 339.

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[1] Prizes given by the Suffolk Horse Society.

[2] Prizes given by the Suffolk Agricultural Association, through the Cambridge Local Committee.

[3] £100 towards these Prizes were given by the British Percheron Horse Society.

[4] Perpetual Challenge Cup, value Fifty Guineas, given by the British Percheron Horse Society for the best Two-year-old Percheron Stallion in Class 32 born in Great Britain.

Class 33.—*Percheron Stallions, born in or before* 1918.

344 **I. (£20, & Champion.[1])**—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morrell, Warwick, for **Rhum** B 53, grey, born in 1917, bred by M. Chopin, La Bigottiere, Mortagne. France; *s.* Lagor F 100512, *d.* Mazurka F 105941 *by* Huchoir F 77760.

350 **II. (£10, & R. N. for Champion.[1])**—HENRY OVERMAN, Kipton House, Weasenham, King's Lynn, for **Misanthrope** B 5, grey, born in 1912, bred by M. Bourlier, St. Martin, D'Ecubler, Laigle, France; *s.* Doguet ex Lapeur F 60641, *d.* Dantone F 60322 *by* Rival F 45065.

346 **III. (£5.)**—MRS. ROBERT EMMET, for **Salax** B 157, grey, born in 1918, bred by M. Chaumont, La Baudrannière, Revillon, France; *s.* Instar F 78857, *d.* Sentinelle F 62750 *by* Castel F 48964.

343 **R. N.**—CO-OPERATIVE WHOLESALE SOCIETY, LTD., Estate Office, Coldham, Wisbech, for **Salammbo.**

H. C.—347, 349. **C.**—342.

Class 34.—*Percheron Fillies, born in* 1920.

355 **I. (£20, & Champion.[2])**—HENRY R. OVERMAN, Brampton Ash, Market Harborough, for **Brampton Diana**, grey; *s.* Misanthrope B 5, *d.* Quartelette B 19 *by* Simon F 99810.

354 **II. (£10, & R. N. for Champion.[2])**—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morrell, Warwick, for **Greyling Unieme** B 238, grey; *s.* Nonius B 4, *d.* Malaria B 10 *by* Inegal F 79874.

353 **III. (£5.)**—THOMAS COOK, Hobland House, Bradwell, Gt. Yarmouth, for **Hobland Chille** B 282, grey; *s.* Misanthrope B 5, *d.* Quanuse B 57 *by* Lycaon F 104544.

352 **R. N.**—JOHN CHIVERS, Wychfield, Cambridge, for **Histon Belle.**

Class 35.—*Percheron Fillies, born in* 1919.

360 **I. (£20.)**—HENRY R. OVERMAN, Brampton Ash, Market Harborough, for **Brampton Caroline** B 95, dark grey; *s.* Ombrien F 124151, *d.* Irene B 23 by Clamarz F 64207.

359 **II. (£10.)**—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morrell, Warwick, for **Torsade** B 433, grey, bred by M. Vaux, Breuil, St. Jouin de Blavon, France; *s.* Polygone F 125447, *d.* Pantoufle F 127769 *by* Latin F 100016.

357 **III. (£5.)**—JOHN CHIVERS, Wychfield, Cambridge, for **Histon Lady** B 209, dark grey; *s.* Misanthrope B 5, *d.* Quortes B 188 *by* Fier-a-Bras 65250.

356 **R. N.**—CHARLES P. ACKERS, Huntley Manor, Gloucester, for **Tarentine.**

Class 36.—*Percheron Mares, with Foals at foot.*

370 **I. (£20, & Champion.[3])**—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morrell, Warwick, for **Messaline** B 211, grey, born in 1912, bred by M. Demange, Blavette, Barville, Mortagne, France; *s.* Douvreur-ex-Couvreur F 58335, *d.* Paquerette F 87642 *by* Voltigeur F 44388. [Foal *by* Rhum B 53.]

381 **II. (£10, & R. N. for Champion.[3])**—MISS R. M. HARRISON, Maer Hall, Newcastle, Staffs, for **Quitana** B 90, grey, born in 1916, bred by Mons. Chopin, Chemille, Belme, Mortagne, France; *s.* Lagor F 100512, *d.* Mazurka F 105941 *by* Huchoir F 77760. [Foal *by* Ortho B 22.]

376 **III. (£5.)**—THE HACHE STUD, Bulstrode, Gerrards Cross, Bucks., for **Quannelle** B 383, dark grey, born in 1916, bred by M. Brissard, Disse-sous-Ballon, Marolles-les-Braults, France; *s.* Misanthrope B 5, *d.* Marianne F 106615 *by* Ibu F 82881. [Foal *by* Quapulet 81.]

364 **R. N.**—LT.-COL. SIR MERRIK R. BURRELL, BT., C.B.E., Knepp Castle, Horsham, for **Potence** B 30, grey, born in 1915, bred by M. Haye, La Balardiere, Mortagne, France; *s.* Japon F 84819, *d.* Gigogne F 69871 *by* Babylas F 55508. [Foal *by* Omer.]

H. C.—379, 380. **C.**—365, 377.

Class 37.—*Percheron Colt or Filly Foals, the produce of Mares in Class* 36.

394 **I. (£10.)**—JOHN CHIVERS, Wychfield, Cambridge, for dark grey filly, born March 25; *s* Brilliant H B 42, *d.* Petronne B 176 *by* Japon 84819.

396 **II. (£5.)**—MRS. ROBERT EMMET, Moreton Paddox, Moreton Morrell, Warwick, for **Greyling Warrior** B 170, black colt, born March 28; *s.* Rhum B 53, *d.* Semiramis B 851 *by* Lichas F 98731.

393 **III. (£3.)**—JOHN CHIVERS, for dark grey colt, born April 3; *s.* Brilliant H B 42, *d.* Perthe B 178 *by* Japon F 84819.

392 **R. N.**—LT.-COL. SIR MERRIK R. BURRELL, Bt., C.B.E., Knepp Castle, Horsham, for **Knepp Wainor.**

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[1] Perpetual Challenge Cup, value Fifty Guineas, given by the British Percheron Horse Society for the best Percheron Stallion in Classes 31–33.

[2] Perpetual Challenge Cup, value Fifty Guineas, given by the British Percheron Horse Society for the best Percheron Filly in Class 34 born in Great Britain.

[3] Perpetual Challenge Cup, value Fifty Guineas, given by the British Percheron Horse Society for the best Percheron Mare or Filly in Classes 34–36.

Hunters.

Class 38.—*Hunter Colts or Geldings, born in* 1921.

416 **I. (£20.)**—Lt.-Col. Roland Vaughan Gwynne, D.S.O., Michelham Priory, Upper Dicker, Hellingly, Sussex, for **Michelham John**, bay gelding; *s.* Forte, *d.* Michelham Fare.

417 **II. (£10.)**—Shirley H. Jenks, Pilsdon, Dorset, for **Pilsdon King**, chestnut colt; *s.* Silver Grill, *d.* Cork Gipsy Maid 4260 *by* Silver King 54.

414 **III. (£5.)**—Major Clive Behrens, Swinton Grange, Malton, for **Ptarmigan**, bay gelding; *s.* Primary, *d.* Heather 3rd 4016 *by* Scotch Sign.

422 **R. N.**—Major E. M. Watts, Eastwood Park, Falfield, Glos., for **Coughlin.**
H. C.—418, 420.

Class 39.—*Hunter Geldings, born in* 1920.

433 **I. (£20.)**—Major Cecil Wilson, Lyddington Manor, Swindon, for **Mr. Johnson** 558 bay; *s.* Ilston, *d.* Actress 11th 5587.

432 **II. (£10.)**—Major E. M. Watts, Eastwood Park, Falfield, Glos., for **Shere Khan**, bay; *s.* Ilston, *d.* Seaforth Lassie 5850.

427 **III. (£5.)**—Benjamin Howkins, Bromham, Bedford, for **Carello**, chestnut; *s.* Take Care, *d.* Priscilla.

424 **R. N.**—John Darby, Hillmorton, Rugby, for **The Knight.**
H. C.—425, 430.

Class 40.—*Hunter Geldings, born in* 1919.

434 **I. (£20.)**—John Aspinall, Paddocks, Elsenham, Essex, for **Merrik** 567, brown, bred by Sir Merrik R. Burrell, Bt., Knepp Castle, Horsham; *s.* The Best 147, *d.* Princess Ruby 2nd 3201 *by* Red Prince 2nd.

435 **II. (£10.)**—Major Clive Behrens, Swinton Grange, Malton, for **Hartshorn**, bay; *s.* Crathorne, *d.* Heather 3rd 4106 *by* Scotch Sign.

Class 41.—*Hunter Fillies, born in* 1921.

443 **I. (£20, & Champion.[1])**—Lt.-Col. David Davies, M.P., Broneirion, Llandinam, Mont. for **Princess**, chestnut; *s.* Bachelor's Image 202, *d.* Lottery.

442 **II. (£10.)**—John Darby, Hillmorton, Rugby, for **Mermaid**, black; *s.* Matelot 197.

444 **III. (£5.)**—Fawcett Hignett, Bankfield House, West Derby, Liverpool, for chestnut; *s.* Maître Corbeau 179, *d.* Alice 2nd *by* Ben Wyvis 20.

441 **R. N.**—Mrs. F. G. Chamberlain, The Moyse, Horsham St. Faith, Norfolk, for **Seaforth.**

Class 42.—*Hunter Fillies, born in* 1920.

452 **I. (£20, & R. N. for Champion.[1])**—Assheton N. Clegg, Dunham Massey, Altrincham for **Dairy Belle**, chestnut; *s.* Dairy Bridge, *d.* Hackler's Bey *by* Cosmos Bey.

448 **II. (£10.)**—Major Clive Behrens, Swinton Grange, Malton, for **Halcyone** 5879, chestnut *s.* Fealsham, *d.* Heather 3rd 4106 *by* Scotch Sign.

449 **III. (£5.)**—Arthur S. Bowlby, Gilston Park, Harlow, for **Darigal's Darling** 5882, chestnut; *s.* Darigal, *d.* Grace Darling 3rd 4098.

450 **R. N.**—Captain Richard G. Buxton, Petygards, Sprole, Kings Lynn, for **Christina.**
H. C.—451. **C.**—455.

Class 43.—*Hunter Fillies, born in* 1919.

457 **I. (£20.)**—Arthur S. Bowlby, Gilston Park, Harlow, for **Lady Grace 3rd** 5759, chestnut; *s.* Darigal, *d.* Grace Darling 3rd 4098.

459 **II. (£10.)**—E. Guy Fenwick, North Luffenham Hall, Stamford, for **Santa Gertrudis** 5690, bay; *s.* Santair, *d.* Ormeau 5689 *by* Ormondale.

461 **III. (£5.)**—Captain E. W Goldsworthy, Yaldham Manor, Kemsing, Kent, [for **Primrose 5th** 5651, chestnut; *s.* Stortford 145, *d.* Pearl 2nd 3996 *by* Battlement.

462 **R. N.**—C. J. Phillips, Old Dalby Hall, Melton Mowbray, for **Juliet.**
C.—458.

Class 44.—*Hunter Mares (Novice), with Foals at foot.*[2]

463 **I. (£20, & R. N. for Champion.[3])**—John C. Baird, West Stow Hall, Bury St. Edmunds, for **Victagon**, chestnut, born in 1910, bred by the Exors. of the late J. C. Hill; *s.* Mintagon, *d.* Winged Victory *by* Victor Chief. [Foal *by* Lorenzo.]

473 **II. (£10.)**—Major E. M. Watts, Eastwood Park, Falfield, Glos., for **Flannelette** 5681, chestnut, born in 1918, bred by M. S. Thomson, Kelso, Roxburghshire; *s.* Hunty Gowk 186, *d.* Pyjamas 5320 *by* Pantomime. [Foal *by* Political.]

472 **III. (£5.)**—Eaton Kimbell, The Grange, Great Brington, Northampton, for **Sun Star** 4625, brown, born in 1911, bred by John Ashburner, Brandon, Coventry; *s.* Heliotrope, *d.* Sunshine 6th 4960. [Foal *by* Pytchley.]

467 **R. N.**—F. W. B. Gubbins, Sawcliffe Park, Banbury, for **Redskin.**
H. C.—471.

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[1] Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society for the best Filly not exceeding three years old in Classes 41–43, which must be either registered in the Hunter Stud Book, or the entry tendered within a month of the Award.

[2] Prizes given by the Hunters' Improvement and National Light Horse Breeding Society.

[3] Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society, for the best Mare four years old and upwards in Classes 44 and 45, which must be either registered in the Hunter Stud Book, or the entry tendered within a month of the Award.

Class 45.—*Hunter Mares, with Foals at foot.*

478 **I. (£20, & Champion.[1])**—Lady Yule, Hanstead House, Bricket Wood, for **First Choice 2nd** 3842, brown, born in 1905, bred by Mr. Stuckey, North Weald, Epping, Essex; *s.* Choson 5th, *d.* 3965. [Foal *by* Darigal.]

477 **II. (£10.)**—Major H. Denison Pender, Strangeways, Marnhull, Dorset, for **Pavlova 3rd** 5828, bay. [Foal *by* Marajax.]

Class 46.—*Hunter Colt Foals, the produce of Mares in Classes* 44 *or* 45.

479 **I. (£10.)**—John C. Baird, West Stow Hall, Bury St. Edmunds, for bay, born March 31; *s.* Lorenzo, *d.* Victagon *by* Mintagon.

481 **II. (£5.)**—S. G. Hough, Springhouse Park, Theydon Bois, Essex, for chestnut, born April 9; *s.* Nurieddin 2nd, *d.* Little Orme *by* Myram.

Class 47.—*Hunter Filly Foals, the produce of Mares in Classes* 44 *or* 45.[2]

490 **I. (£10.)**—Lady Yule, Hanstead House, Bricket Wood, for **Consternation,** chestnut, born April 11; *s.* Darigal, *d.* First Choice 2nd 3842 *by* Choson 5th.

488 **II. (£5.)**—Major H. Denison Pender, Strangeways, Marnhull, Dorset, for bay, born May 27; *s.* Marajax, *d.* Pavlova 3rd 5828.

484 **III. (£3.)**—F. W. Gubbins, Swalcliffe Park, Banbury, for **Rawnie,** bay, born April 24; *s.* Time Honoured, *d.* Red Skin 4987 *by* Red Sahib 75.

489 **R. N.**—Major E. M. Watts, Eastwood Park, Falfield, Glos.

H. C.—487. **C.**—485.

Polo and Riding Ponies.

Class 48.—*Polo and Riding Pony Stallions, born in or before* 1919, *not exceeding* 15 *hands.*

491 **I. (£15, & Champion.[3])**—Tresham Gilbey, Whitehall, Bishop's Stortford, for **Reform** 1002, bay, born in 1917; *s.* Rack Rent 842, *d.* Good Girl 2nd 2861.

494 **II. (£10, & R. N. for Champion.[3])**—C. Howard Taylor, Middlewood Hall, Barnsley, for **Field Marshal** 512, chestnut, born in 1907; *s.* Maréchal Niel 363, *d.* Polo Queen 1217 *by* Boy of the Period.

493 **III. (£5.)**—Humphrey R. Pelly, Lyndsays Farm, Ingatestone, for **Aviator** 853, chestnut, born in 1913, bred by Miss Corbett, Bridgnorth; *s.* White Wings 464, *d.* Telegram 2341.

492 **R. N.**—Stephen Mumford, Jun., Stud Farm, Moreton Morrell, Warwick, for **Gallant Worcester.**

Class 49.—*Polo and Riding Pony Colts, Fillies or Geldings, born in* 1921.[4]

495 **I. (£15.)**—Captain W. H. France-Hayhurst, Bostock Hall, Middlewich, for **Rosewood** (Supp. 1921), chestnut colt; *s.* Tantamount (Vol. 22, p. 107), *d.* Lady Brilliant 4169 *by* Field Marshal 512.

502 **II. (£10.)**—Lady Penrhyn, Wicken Park, Stony Stratford, for **The Quaker** (Supp. 1922), brown colt; *s.* Prince Friarstown (Supp. 1917), *d.* Hannah Ann (approved Mare Register, p. 45) *by* Chare.

497 **III. (£5.)**—Tresham Gilbey, Whitehall, Bishop's Stortford, for **Good Form** (Supp. 1922), bay colt; *s.* Reform 1002, *d.* Right Out (Supp. 1909) *by* Right Forard 368.

498 **R. N.**—Tresham Gilbey, for **Starlight 8th.**

Class 50.—*Polo and Riding Pony Colts, Fillies or Geldings, born in* 1920.

504 **I. (£15.)**—Tresham Gilbey, Whitehall, Bishop's Stortford, for **Wild Man** (Supp. 1921), bay colt, bred by Captain Noel H. Wills, Misarden Park, Cirencester; *s.* Cherry Tint 761, *d.* Bowery 3388 *by* Bowdon.

505 **II. (£10.)**—Edward Hurtley, Crowborough Warren, Sussex, for **Alacrity** (Supp. 1922), bay colt; *s.* Goodward 948, *d.* Jane 4th 3765 *by* Spanish Hero 372.

503 **III. (£5.)**—Tresham Gilbey, for **Good Mark** (Supp. 1921), bay filly; *s.* Goodward 948, *d.* Coming Dawn (Supp. 1906) *by* Mark Forard.

Class 51.—*Polo and Riding Pony Fillies or Geldings, born in* 1919.

506 **I. (£15, & R. N. for Champion.[5])**—Captain W. H. France-Hayhurst, Bostock Hall, Middlewich, for **Coronetta** (Supp. 1921), bay filly, born in 1919, bred by C. R. Longe, Rangemoor, Rostherne, Knutsford; *s.* Little Corona 814, *d.* Miss Broom (approved Mare Register, p. 37).

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[1] Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society, for the best Mare four years old and upwards in Classes 44 and 45, which must be either registered in the Hunter Stud Book, or the entry tendered within a month of the Award.

[2] Prizes given by the Hunters' Improvement and National Light Horse Breeding Society.

[3] Champion Gold Medal given by the National Pony Society for the best Stallion or Colt in Classes 48–50.

[4] Prizes given by the National Pony Society.

[5] Champion Gold Medal given by the National Pony Society for the best Mare or Filly in Classes 49–52.

507 **II. (£10.)**—Tresham Gilbey, Whitehall, Bishop's Stortford, for **Winning Magic** (Supp. 1921), bay filly, bred by Captain Noel H. Wills, Misarden Park, Cirencester; *s.* Cherry Tint 761, *d.* Winnie Magill 3069 *by* Parthian 2nd.

510 **III. (£5.)**—C. Howard Taylor, Middlewood Hall, Barnsley, for **Goody-Two-Shoes** (Supp., 1921), chestnut; *s.* Goodward 948, *d.* Calceolaria 2166 *by* Maréchal Niel 363.

508 **R. N.**—Gilbert Greenall, Walton Hall, Warrington, for **King Bertram.**

Class 52.—*Polo and Riding Pony Mares, with Foals at foot, not exceeding* 14·2 *hands.*

511 **I. (£15, Champion,[1] & B. M.[2])**—Tresham Gilbey, Whitehall, Bishop's Stortford, for **Waiting Maid** 3992, bay, bred by Captain Noel H. Wills, Misarden Park, Cirencester; *s.* Arthur D 593, *d.* Alberni 2835 *by* Right Forard 368. [Foal *by* Reform 1002.]

512 **II. (£10, & R. N. for B. M.[2])**—C. Howard Taylor, Middlewood Hall, Barnsley, for **Calico** 3322, chestnut, born in 1914; *s.* Don Patricio 592, *d.* Calceolaria 2166 *by* Maréchal Niel 363. [Foal *by* The Marne.]

Arabs.

Class 53.—*Arab Stallions, any age.*

516 **I. (£15, & Champion.[3])**—Lady Wentworth, Crabbet Park, Poundhill, Crawley, Sussex, for **Skowronek,** white, born in 1909, bred by Count F. Potocki, Schepatowka, Poland; *s.* Ibraham, *d.* Yaskoulka *by* Rymnik.

514 **II. (£10 & R. N. for Champion.[3])**—Lady Wentworth, for **Rafeef,** chestnut, born in 1917; *s.* Nasik, *d.* Rizala *by* Astraled.

Class 54.—*Arab Mares, with Foals at foot.*[4]

518 **I. (£15, Champion,[5] & Champion.[6])**—Lady Wentworth, Crabbet Park, Poundhill, Crawley, for **Nasra,** bay, born in 1908; *s.* Daoud, *d.* Nefisa *by* Hadban. [Foal *by* Skowronek.]

519 **II. (£10, R. N. for Champion,[5] & R. N. for Champion.[6])**—Lady Wentworth, for **Rissla,** chestnut, born in 1917; *s.* Berk, *d.* Risala *by* Mesaoud. [Foal *by* Skowronek.]

Cleveland Bays or Coach Horses.

Class 55.—*Cleveland Bay or Coaching Stallions, any age.*

521 **I. (£15.)**—J. W. Lett, Scagglethorpe Manor, Malton, for **Rillington Victor** 2536, bay, born in 1910, bred by W. Wood, Bilsdale, Yorks; *s.* Breaston Prince 2451, *d.* Queen Rocket 948 *by* Prince of Dalex.

520 **II. (£10.)**—William Grayson, Normanby House, Pickering, for **Hawsker Edmund** 1758, bay, born in 1920, bred by the late George Allison, Swan Farm, Hawsker; *s.* Aislaby Lad 1722, *d.* Lady Mary 1402 *by* King George 1718.

Class 56.—*Cleveland Bay or Coaching Mares, with Foals at foot.*

522 **I. (£15.)**—J. W. Lett, Scagglethorpe Manor, Malton, for **Rillington Fascination** 45, bay, born in 1917, bred by Messrs. Leaf, Escrick; *s.* Rillington Victor 2536, *d.* Prudence. [Foal *by* Charmer 1737.]

Hackneys.

Class 57.—*Hackney Stallions, born in* 1920.[7]

528 **I. (£15, & Champion.[8])**—W. J. Tennant, Carleton, Pontefract, for **Fashion of Carleton** 13934, dark chestnut; *s.* Carleton Quality 12595, *d.* Maroic Lily 18406 *by* Royal Danegelt 5785.

525 **II. (£10.)**—Sir Lees Knowles, Bt., C.V.O., O.B.E., Westwood, Pendlebury, Manchester, for **Salford Doron** 13701, black; *s.* King's Chamberlain 13407, *d.* Slashing Dorothy 23769 *by* Antonius 10559.

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[1] Champion Gold Medal given by the National Pony Society for the best Mare or Filly in Classes 49–52.

[2] Bronze Medal given by the National Pony Society for the best Foal in Class 52 entered in the Supplement to the National Pony Stud Book.

[3] Gold Medal given through the Arab Horse Society for the best Stallion in Class 53.

[4] Prizes given by the Arab Horse Society.

[5] Gold Medal given through the Arab Horse Society for the best Mare in Class 54.

[6] Gold Medal given through the Arab Horse Society for the best Foal in Class 54, eligible for entry in the Arab Horse Stud Book.

[7] Prizes given by the Hackney Horse Society.

[8] Champion Prize of £10 given by the Hackney Horse Society for the best Stallion in Classes 57–59.

523 **III. (£5.)**—Mrs. Mildred Christoforides, Leyswood, Groombridge, Sussex, for **Burleigh Ali Bey** 13947, chestnut, bred by A. E. Roberts, Hollin House, Tunbridge Wells; *s.* Cudham Candidate 13181, *d.* Garston Leopardess *by* Leopard 9783.
526 **R. N.**—Sir Edward Mann, Bt., Thelveton Hall, Scole, Norfolk, for **Thelveton Magnate.**
C.—524, 527.

Class 58.—*Hackney Stallions, born in or before* 1919, *over* 14 *and not exceeding* 15·2 *hands.*

530 **I. (£15, & R. N. for Champion.[1])**—William Greenwood, Airedale Hackney Stud, Roundhay, Leeds, for **Airedale Proctor** 13360, chestnut, born in 1917; *s.* King's Proctor 11102, *d* Belle Mere 21237 *by* Polonius 4931.
529 **II. (£10.)**—The Exors. of the late William Flanders, Witcham, Isle of Ely, Cambs., for **Witcham Antonius** 13943, chestnut, born in 1917; *s.* Witcham Friar Tuck 8036, *d.* Witcham Lady 25002 *by* Antonius 10559.

Class 59.—*Hackney Stallions, born in or before* 1919, *over* 15·2 *hands.*

534 **I. (£15.)**—Malcolm Sinclair, The Paddocks, Mill Hill, N W.7, for **Eton Rambler** 13766, chestnut, born in 1918, bred by W. R. Lysaght, Chepstow; *s.* Adbolton Kingmaker 12274, *d.* Kirkburn Sweetbriar *by* Kirkburn Toreador 8534.
532 **II. (£10.)**—Mrs. Fletcher & Sons, The Grange, Angram, York, for **Angram Majestic** 13489, chestnut, born in 1919, bred by John Wreghitt, East Thorpe, Market Weighton; *s.* Angram Majestic 11967, *d.* Londesborough Suffragette 20836 *by* Kirkburn Toreador 8534.
533 **III. (£5.)**—J. W. Lett, Scagglethorpe Manor, Malton, for **Rillington Stamina** 13421, dark chestnut, born in 1918, bred by T. W. Marshall, Buckthorpe, York; *s.* Buckthorpe Viceroy 13336, *d.* Edith Marshall 24886 *by* Royal Denmark 8624.

Class 60.—*Hackney Fillies or Geldings, born in* 1920.[2]

541 **I. (£15.)**—J. E. Rushworth, Eskdale, Bargate, Grimsby, for **Beckingham Lady Vic** 25745, chestnut filly, bred by R. Surfleet, The Limes, Beckingham, Doncaster; *s.* Axholme Victor 13500, *d.* Beckingham Polly Helmsley 17121 *by* Polonius 4931.
538 **II. (£10.)**—William Greenwood, Airedale Hackney Stud, Roundhay, Leeds, for **Airedale Leaderette** 25582, chestnut filly; *s.* Kirkburn Leader 12875, *d.* Belle Mere 21237 *by* Polonius 4931.
539 **III. (£5.)**—Edward B. Hamond, Waterden House, Walsingham, for **Waterden Charm** 25712, chestnut filly; *s.* Leopard 9783, *d.* Waterden Connie 23807 *by* Creake Palm 11384.

Class 61.—*Hackney Fillies or Geldings, born in* 1919.

545 **I. (£15.)**—Malcolm Sinclair, The Paddocks, Mill Hill, N.W.7, for **Eton Chasulaine** 25523, black filly, bred by the late J. Makeague, Newton-le-Willows; *s.* King's Chamberlain 13407, *d.* Chasuble 23503 *by* Marlboro 11136.
546 **II. (£10.)**—W. J. Tennant, Carleton, Pontefract, for **Beauty of Carleton** 24889, dark chestnut filly; *s.* Carleton Quality 12595, *d.* Maroie Lady 18406 *by* Royal Danegelt 5785.
543 **III. (£5.)**—Mrs. Fletcher & Sons, The Grange, Angram, York, for **Angram Express** 25024, chestnut filly, bred by G. R. Ditchburn, Lodge Farm, Thorganby, York; *s.* Angram Majestic 11967, *d.* Thorganby Princess 24645 *by* Parkhouse Chantecler 11843.
544 **R. N.**—Henry T. Holloway, West Lavington, Wilts, for **Aphrodite Lavington.**

Class 62.—*Hackney Mares, with Foals at foot.*

552 **I. (£15, & Champion.[3])**—Sir Lees Knowles, Bt., C.V.O., O.B.E., Westwood, Pendlebury, Manchester, for **Slashing Dorothy** 23769, chestnut, born in 1913, bred by the late Sir Walter Gilbey, Bt., Elsenham Hall, Essex; *s.* Antonius 10559, *d.* Flash Dorothy 19088 *by* Forest Star 7445. [Foal *by* Bertrano 13288.]
553 **II. (£10, & R. N. for Champion.[3])**—Malcolm Sinclair, The Paddocks, Mill Hill, N.W 7, for **Flash Clara** 19087, chestnut, born in 1906, bred by the late Sir Walter Gilbey, Bt., Elsenham Hall, Essex; *s.* Royal Danegelt 5785, *d.* Bonnie Clara 6419 *by* Connaught 1453. [Foal *by* Successful 8314.]
548 **III. (£5.)**—Henry B. Brandt, Capenor, Nutfield, Surrey, for **Bouncey Girl** 21883, chestnut, born in 1910, bred by the late Sir Walter Gilbey, Bt., Elsenham Hall, Essex; *s.* Antonius 10559, *d.* Gallant Girl 15093 *by* Revival 7236. [Foal *by* Capenor Sherwood Forester 12960.]
551 **R. N.**—Edward B. Hamond, Waterden, Walsingham, for **Waterden Connie.**
H. C.—547. **C.**—550.

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[1] Champion Prize of £10 given by the Hackney Horse Society for the best Stallion in Classes 57–59.

[2] Prizes given by the Hackney Horse Society.

[3] Champion Prize of £10 given by the Hackney Horse Society for the best Mare or Filly in Classes 60–62.

Hackney Ponies.

Class 63.—*Hackney Pony Stallions, born in or before* 1919, *not exceeding* 14 *hands.*

555 **I. (£15, & Special.[1])**—Robert Horner, 39, Waterloo Road, Middlesbrough, for **Haughty Prince** 13776, bay, born in 1919; *s.* Fusee 12626, *d.* Sweet Liberty 25321 *by* Successful 8314.

556 **II. (£10, & R. N. for Special.[1])**—J. E. Rushworth, Eskdale, Bargate, Grimsby, for **Holland Westri** 13729, brown, bred by Mrs. Van Nievelt Van Hattum, Camilla Lacey, Dorking; *s.* Holland Horan Bromus 12085, *d.* Lady Cass 19255 *by* Successful 8314.

554 **III. (£5.)**—Major J. W. Barclay, Luxfield, Great Baddow, Chelmsford, for **Master Shot** 13529, brown, born in 1917, bred by Edwin Pears, Laytham Green, Ellerton, Yorks; *s.* Melbourne Shot 13055, *d.* Lady Moon 24538 *by* Successful 8314.

Class 64.—*Hackney Pony Mares, with Foals at foot, not exceeding* 14 *hands.*[2]

559 **I. (£15, & Special.[3])**—J. E. Kerr, Harviestoun Castle, Dollar, for **Harviestoun Reina** 24964, chestnut, born in 1917; *s.* Harviestoun Mascot 12858, *d.* Harviestoun Resca *by* Sir Archie 10425. [Foal *by* Harviestoun Scottie 13454.]

558 **II. (£10, & R. N. for Special.[3])**—Walter S. Glynn, The Grange, Bletchley, for **Towthorpe Firebell** 24605, brown, born in 1911, bred by Robert Whitworth, Willitoft, Howden, Yorks; *s.* Fireboy 7440, *d.* Melbourne Belle 19338 *by* Successful 8314. [Foal *by* Royal Success 8995.]

Welsh Mountain Ponies.[4]

Class 65.—*Welsh Pony Stallions, born in* 1918, *not exceeding* 12 *hands, or in* 1919, *not exceeding* 11·3 *hands, or in* 1920, *not exceeding* 11·2 *hands.*

561 **I. (£15.)**—Mrs. H. D. Greene, Grove, Craven Arms, for **Grove Sprightly** 1036, grey born in 1918; *s.* Shooting Star 73, *d.* Grove Sprite 2nd 4431 *by* Grove Ballistite 200.

562 **II. (£10.)**—F. Ffitch Mason, The Faraam, Killay, Glamorgan, for **Faraam Constellation,** grey, born in 1920, bred by H. Rowe, Stretford, Grove, Craven Arms; *s.* Shooting Star 73, *d.* Grove Stella 2866 *by* Grove Ballistite 200.

560 **III. (£5.)**—Walter S. Glynn, The Grange, Bletchley, for **Brynhire Starlight,** grey, born in 1918; *s.* Shooting Star 73, *d.* Grove Limelight 3302 *by* Dyoll Starlight.

Class 66.—*Welsh Pony Stallions, born in or before* 1917, *not exceeding* 12 *hands.*

563 **I. (£15.)**—Mrs. H. D. Greene, Grove, Craven Arms, for **Grove King Cole 2nd** 565, grey born in 1911; *s.* Grove King Cole 1917, *d.* Bleddfa Tell Tale 943 *by* Tyrant 477.

564 **II. (£10.)**—F. Ffitch Mason, The Faraam, Killay, Glamorgan, for **Grove Grey Dawn** 893, grey, born in 1914, bred by Mrs. H. D. Greene, Grove, Craven Arms; *s.* Dyoll Starlight 4, *d.* Grove Greyling 2879 *by* Stretton Dynamite 76.

Class 67.—*Welsh Pony Mares, born in or before* 1918, *with Foals at foot, not exceeding* 12 *hands.*

567 **I. (£15.)**—Mrs. H. D. Greene, Grove, Craven Arms, for **Grove Firelight** 6037, brown born in 1917; *s.* Shooting Star 73, *d.* Grove Twilight 3017 *by* Grove Ballistite 200. [Foal *by* Grove King Cole 2nd 565.]

568 **II. (£10.)**—F. Ffitch Mason, The Faraam, Killay, Glamorgan, for **Faraam Silverlight** 3802, grey, born in 1911, bred by M. Lloyd, Delfryn, Llanwrda, Carm.; *s.* Dyoll Starlight 4, *d.* Dyoll Quicksilver 76. [Foal *by* Grove Elfin 729.]

565 **III. (£5.)**—Mrs. Frederic Cartmell, Alvaston Fields, Derby, for **Clumber Janet 7th,** brown, born in 1913, bred by the Duchess of Newcastle, Clumber, Worksop; *s.* Linnel Don, *d.* Clumber Janet 3rd 3758 *by* Hardwick Sensation. [Foal *by* Grove King Cole 2nd 565.]

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[1] Special Prize of £10 given by the Hackney Horse Society for the best Stallion in Class 63.

[2] Prizes given by the Hackney Horse Society.

[3] Special Prize of £10 given by the Hackney Horse Society for the best Mare in Class 64.

[4] The Prizes in Class 66, and Silver Medals and Illustrated Certificates to the First Prize Winners in all three Classes were given by the Welsh Pony and Cob Society.

Shetland Ponies.

Class 68.—*Shetland Pony Stallions, born in or before* 1919, *not exceeding* 10·2 *hands.*

569 **I. (£15, & R. N. for Champion.[1])**—Mrs. Etta Duffus, Penniwells, Elstree, Herts, for **Huzzoor of Penniwells** 864, black, born in 1914, bred by Charles A. Rehder, Kirkcarswell, Kirkcudbright; *s.* Haldor 270, *d.* Barbara of Penniwells 2919 *by* Nautilus 571.

573 **II. (£10.)**—R. W. R. Mackenzie, Earlshall, Leuchars, Fife, for **Bright Light of Earlshall** (Vol. 29, p. 68), grey, born in 1919; *s.* Why Not of Earlshall 898, *d.* Brightness of Earlshall 2734 *by* Besieger 235.

572 **III. (£5.)**—R. W. R. Mackenzie, for **Bell Metal of Earlshall** 638, brown, born in 1910; *s.* Borderer of Earlshall 399, *d.* Belle of Bressay 1192 *by* Oman 33.

571 **R. N.**—Miss Jolliffe, Hemingford Park, St. Ives, for **Sambo of Middlebank.**

Class 69.—*Shetland Pony Mares, with Foals at foot, not exceeding* 10·2 *hands.*

575 **I. (£15, & Champion.[1])**—Mrs. Etta Duffus, Penniwells, Elstree, Herts, for **May Queen of Penniwells** 3348, black, born in 1911; *s.* Dante of Coalville 444, *d.* Mayfly of Penniwells 2582 *by* Glencairn 314. [Foal *by* Huzzoor of Penniwells 864.]

Hunter Riding Classes.[2]

Class 70.—*Hunter Mares or Geldings, born in* 1918.

589 **I. (£15.)**—J. Kenneth Stevenson, The Chase, Upper Welland, Malvern Wells, for **Best Man** 530, black gelding, bred by Mr. Harrison, Cirencester; *s.* The Best 147.

583 **II. (£10.)**—John Darby, Hillmorton, Rugby, for **Highwayman** 560, chestnut gelding, bred by Godfrey Morgan, Shrivenham; *s.* John Lambton.

581 **III. (£5.)**—Major Clive Behrens, Swinton Grange, Malton, for **Whitethorn,** chestnut gelding; *s.* Crathorne, *d.* Whinflower 3801 *by* The Hero.

Class 71.—*Hunter Mares or Geldings (Novice), born in or before* 1918, *up to from* 12 *to* 14 *stones.*

593 **I. (£15.)**—B. Giles Bishop, Roddimore, Winslow, for **Brandy,** bay gelding.

594 **II. (£10.)**—B. Giles Bishop, for **Tresuary,** chestnut gelding.

616 **III. (£5.)**—G. B. Radcliffe, Pool Bank Farm, Tarvin, Chester, for **All Black,** black gelding, born in 1916.

610 **R. N.**—Lord Southampton, Rockcliffe Park, Darlington, for **Despot 2nd.**

H. C.—600.

Class 72.—*Hunter Mares or Geldings (Novice), born in or before* 1918, *up to more than* 14 *stones.*

611 **I. (£15.)**—Sir A. Cory-Wright, Bt., Ayot Place, Welwyn, Herts, for **Cark Marquis** 366, bay gelding, aged, bred by Sir William Cooke, Bt., Wyld Court, Hampstead Norris, Newbury; *s.* King's Courtship, *d.* Duchess 12th 5200 *by* Tacitus.

595 **II. (£10.)**—B. Giles Bishop, Roddimore, Winslow, for **Nigil,** bay gelding.

619 **III. (£5.)**—Major W. H. Taylor, The Moors, Birlingham, Pershore, for **Milestone,** brown gelding, born in 1915.

617 **R. N.**—G. B. Radcliffe, Pool Bank Farm, Tarvin, Chester, for **Crusader.**

H. C.—601.

Class 73.—*Hunter Mares or Geldings, born in or before* 1918, *up to from* 12 *to* 13·7 *stones.*

602 **I. (£20, & R. N. for Champion.[3])**—John Drage, Chapel Brampton, Northampton, for **Gentleman Joe,** brown gelding, born in 1914.

622 **II. (£15.)**—J. A. Cheney, Luddington, Peterborough, for **Pontoon,** chestnut gelding, born in 1917, bred by E. Clark, Warmington, Oundle; *s.* Pontifex, *d. by* Bachelor.

596 **III. (£10.)**—B. Giles Bishop, Roddimore, Winslow, for **Dawn,** grey gelding.

630 **IV. (£5.)**—Mrs. R. Laye, The Warren, Wotton-under-Edge, for **Diplomatist** 455, bay gelding, born in 1913.

616 **V. (£3.)**—G. B. Radcliffe, for **All Black.** (See Class 71.)

610 **R. N.**—Lord Southampton, for **Despot 2nd.**

H. C.—599, 632.

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[1] Champion Silver Medal given through the Shetland Pony Stud Book Society for the best Shetland Pony in Classes 68 and 69.

[2] **Prizes given by the Cambridge Local Committee.**

[3] **Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in Hunters for the best Mare or Gelding in Classes 70–75.**

Class 74.—*Hunter Mares or Geldings, born in or before* 1918, *up to more than* 13·7 *and not more than* 15 *stones.*

597 **I. (£20.)**—B. GILES BISHOP, Roddimore, Winslow, for **Regent**, brown gelding.
594 **II. (£15.)**—B. GILES BISHOP, for **Treasury**, chestnut gelding.
585 **III. (£10.)**—JOHN DARBY, Hillmorton, Rugby, for **Jester**, bay gelding, born in 1915.
611 **IV. (£5.)**—SIR A. CORY-WRIGHT, BT., for **Cark Marquis.** (See Class 72.)
603 **V. (£3.)**—JOHN DRAGE, Chapel Brampton, Northampton, for **The Judge**, chestnut gelding, born in 1916.
708 **R. N.**—SIR EDWARD STERN, BT., Fan Court, Chertsey, for **Botha.**
H. C.—581. **C.**—604.

Class 75.—*Hunter Mares or Geldings, born in or before* 1918, *up to more than* 15 *stones.*

652 **I. (£20, & Champion.[1])**—J. PUTNAM, Farringdon House, Exeter, for **Jorrocks**, bay gelding, born in 1914.
619 **II. (£15.)**—MAJOR W. H. TAYLOR, for **Milestone.** (See Class 72.)
617 **III. (£10.)**—G. B. RADCLIFFE, Pool Bank Farm, Tarvin, Chester, for **Crusader**, chestnut gelding, born in 1916, bred by Thomas Quillon, Bonsell, Tipperary ; *s.* Cabra Castle, *d. by* Wanderer.
601 **IV. (£5.)**—JOHN DRAGE, Chapel Brampton, Northampton, for **Kildare**, bay gelding, born in 1916.
583 **V. (£3.)**—JOHN DARBY, for **Highwayman.** (See Class 70.)
595 **R. N.**—B. GILES BISHOP, Roddimore, Winslow, for **Nigil.**

Hacks or Riding Ponies.

Class 76.—*Mares or Geldings, not exceeding* 14 *hands.*

654 **I. (£15.)**—MISS MARY PUTNAM, Farringdon House, Exeter, for **Playful**, bay gelding.
649 **II. (£10.)**—MRS. PHILIP HUNLOKE, Stylehurst Farm, Capel, Surrey, for **Dalesman**, bay gelding, born in 1917.
638 **III. (£5.)**—JAMES G. RUNCIMAN, Cambridge, for **Miss March**, chestnut mare, born in 1917.

Class 77.—*Mares or Geldings, over* 14 *and not exceeding* 15 *hands.*

643 **I. (£15.)**—LADY PENRHYN, Wicken Park, Stony Stratford, for **Blue Rock**, brown gelding, born in 1918 ; *s.* Blue Stone ; *d.* Hannah Ann *by* Chare.
650 **II. (£10.)**—MRS. PHILIP HUNLOKE, Stylehurst Farm, Capel, Surrey, for **Blizzard**, Skewbald mare, born in 1915.
712 **III. (£5.)**—W. J. SMITH, LTD., 21, Little Cadogan Place, London, S.W., for **Cadogan Nicolette**, chestnut mare.
639 **R. N.**—JAMES G. RUNCIMAN, Cambridge, for **Miss Martagon.**

Class 78.—*Mares or Geldings, over* 15 *hands.*

644 **I. (£15, & Champion.[2])**—LADY PENRHYN, Wicken Park, Stony Stratford, for **Cuckoo**, bay mare, born in 1916 ; *s.* Sant Murgis.
612 **II. (£10, & R. N. for Champion.[2])**—G. WATSON, Hyde Park Hotel, London, for **Lighthouse**, brown mare, aged.
647 **III. (£5.)**—MAJOR VIVIAN WILLIAMS, Greens Norton Court, Towcester, for **Harlequin**, chestnut gelding, born in 1915.
648 **R. N.**—MRS. VIVIAN WILLIAMS, for **Orangeman.**
C.—606, 624.

Driving Classes.[3]

SINGLE HARNESS.

Class 79.—*Harness Mares or Geldings (Novice), not exceeding* 14 *hands.*

669 **I. (£15, & R. N. for Champion.[4])**—SAM HOLDSWORTH, 9, Stanmore Place, Lidget Green, Bradford, for **Naughty Princess** 25580, bay mare, born in 1918, bred by H. Field, Ravenspurr, Ing Lane, Holderness Road, Hull ; *s.* Melbourne Shot 13055, *d. by* Royal Success 8995.

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[1] Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in Hunters for the best Mare or Gelding in Classes 70-75.

[2] Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Animal in Classes 76-78.

[3] Prizes given by the Cambridge Local Committee, inclusive of a donation of £106 from Members of the R.A.S.E. interested in Harness Horses.

[4] Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Animal in the Novice Classes 79 to 81.

667 **II. (£10.)**—WALTER S. GLYNN, The Grange, Bletchley, for **Brynhir Lightning,** grey mare, born in 1918; *s.* Shooting Star 93, *d.* Brynhir Jennie *by* Grove Ballistite.

670 **III. (£5.)**—ROBERT HORNER, 39, Waterloo Road, Middlesbrough, for **Little Aeroplane** G 172, bay gelding, born in 1917; *s.* Fusee 12626, *d.* Sweet Liberty 25321 by Successful 8314.

Class 80.—*Harness Mares or Geldings (Novice), over* 14 *and not exceeding* 15 *hands.*

685 **I. (£15, & Champion.[1])**—WILLIAM S. MILLER, Balmanno Castle, Bridge of Earn, N.B., for **Lochardil** G 217, brown gelding, born in 1919, bred by Mrs. Logan, Doon Bank, Victoria Circus, Inverness; *s.* Lord Lucy 13623, *d.* Granny 22571 *by* Mathias 6473.

659 **II. (£10.)**—ROBERT BLACK, The Grove, Osbaldwick, York, for **Signet** G 235, chestnut gelding, born in 1918, bred by A. B. Kensington, Highmanswick, Knockholt, Kent; *s.* Royal Danegelt 5785, *d.* Flower Princess 23105 by King's Proctor 11102.

666 **III. (£5.)**—NIGEL C. COLMAN, Nork Park, Epsom Downs, for **Silhouette of Nork** 25770, brown mare, born in 1918; *s.* Mathias A1 10751, *d.* Cristolia 17233 *by* Polonius 4931.

675 **IV. (£3.)**—H. J COLEBROOK, South Lodge, Iver Heath, Bucks, for **Netherfield Argenteau** G 66, brown bay gelding, born in 1916, bred by Mrs. A. C. King, Braishfield Manor, Romsey; *s* Mathias 6473, *d.* Braishfield Chiffon 22414 by Berry Hill Snap 8739.
H. C.—671, 679.

Class 81.—*Harness Mares or Geldings (Novice), over* 15 *hands.*

660 **I. (£15.)**—ROBERT BLACK, The Grove, Osbaldwick, York, for **Netherland,** chestnut gelding.

696 **II. (£10.)**—WILLIAM MORTON, Grandford House, March, Cambs, for **Histon Lady Sunlight** 24722, roan mare, born in 1918, bred by John Chivers, Wychfield, Cambridge; *s.* Leopard 9783, *d.* Shining Sunlight 23342 *by* Antonius 10559.

681 **III. (£5.)**—JOHN HIGHST, Wardhead, Stewarton, N.B., for **Kentmere King** G 190, bay gelding, born in 1915, bred by J. H. Wright, Morton, Bingley; *s.* Mathias 6473, *d.* Queen of Newton 16122 *by* Royal Danegelt 5785.

692 **IV. (£3.)**—MRS MILDRED CHRISTOFORIDES, Leyswood, Groombridge, Sussex, for **Queen of the Movies** 24752, chestnut mare, born in 1918, bred by A. B. Kensington, Highmanswick, Knockholt, Kent; *s.* Garston Proctor 12843, *d.* Garston Leopardess 22009 *by* Leopard 9783.

697 **R. N.**—JOSEPH SMITH, 56, Victoria Road East, Leicester, for **Leicester Fascination.**

Class 82.—*Harness Mares or Geldings, not exceeding* 14 *hands, to be driven by amateurs.*

655 **I. (£15.)**—MRS. JAMES PUTNAM, Farringdon House, Exeter, for **Buckley Fame** G 178 bay gelding, born in 1917, bred by the late Walter Cliff, Melbourne Hall, York; *s.* Melbourne Shot 13055, *d.* Phyllis Melbourne 23281 *by* Melbourne Hall 11510.

651 **II. (£10.)**—MRS. PHILIP HUNLOKE, Stylehurst Farm, Capel, Surrey, for **Habrough Squire** G 203, brown gelding, born in 1911, bred by Mrs. J. A. van Nievelt van Hattum, Camilla Lacey, Dorking; *s.* Sir Horace 5402, *d.* Seaham Nivette 19512 *by* Monte Christo 7933.

Class 83.—*Harness Mares or Geldings, over* 14 *hands, to be driven by Amateurs.*

656 **I. (£15, Champion,[2] & Champion.[3])**—MRS. JAMES PUTNAM, Farringdon House, Exeter, for **Park Carnation** 22717, brown mare, born in 1907, bred by William Bellamy, Park House, Wimblington, March; *s.* Luath 9328, *d.* Park Sunshine 22733 *by* Lord Dundreary 7907.

661 **II. (£10.)**—RICHARD BELCHER, High Street, West Bromwich, for **Knight Commander** G 106, chestnut gelding, born in 1912, bred by Mrs. E. C. Rodger, Bridgelands, Selkirk; *s.* Mathias 6473, *d.* Bridgelands La Capite *by* Blaze 2nd 2376.

698 **III. (£5.)**—JOSEPH SMITH, 56, Victoria Road East, Leicester, for **Leicester Princess** 24544, chestnut mare, born in 1916, bred by J. O. Nicol, London Road, Leicester; *s.* Mathias 6473, *d.* Westfield Surprise 21744 *by* Paddock Polonius 7208.

675 **IV. (£3.)**—H. J. COLEBROOK, for **Netherfield Argenteau.** (See Class 80.)

700 **R. N.**—A. & L. BELDAM, Bluntisham, St. Ives, for **Histon Sunlight.**
H. C.—543.

Class 84.—*Harness Mares or Geldings, not exceeding* 13·2 *hands.*

687 **I. (£15, R. N. for Champion,[2] & R. N. for Champion.[3])**—WILLIAM S. MILLER, Balmanno Castle, Bridge of Earn, N.B., for **Miss Freda** 25730, bay brown mare, born in 1918, bred by John Blaken, Wilberfoss, York; *s.* Melbourne Shot 13055, *d.* Kitten 12772 by Sir Horace 5402.

655 **II. (£10.)**—MRS. JAMES PUTNAM, for **Buckley Fame.** (See Class 82.)

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[1] Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Animal in the Novice Classes 79 to 81.

[2] Gold Challenge Cup, value Fifty Guineas, given for the best Animal in Classes 82 to 87.

[3] Champion Prize of £5 given by the Hackney Horse Society for the best Mare or Gelding in Classes 79 to 87, the produce of a registered Hackney Stallion.

667 **III. (£5.)**—Walter S. Glynn, for **Brynhir Lightning.** (See Class 79.)
682 **IV. (£3.)**—John Highst, Wardhead, Stewarton, N.B., for **Parkside Modester** 24564, brown mare, born in 1916, bred by the late Walter Cliff, Melbourne Hall, York; *s.* Royal Success 8995, *d.* Lucy Melbourne 23671 by Successful 8314.
670 **R. N.**—Robert Horner, 39, Waterloo Road, Middlesbrough, for **Little Aeroplane.**
H. C.—651.

Class 85.—*Harness Mares or Geldings, over* 13·2 *and not exceeding* 14 *hands.*

657 **I. (£15.)**—Mrs. James Putnam, Farringdon House, Exeter, for **Melbourne Fire** G 85, bay gelding, born in 1910, bred by the late Walter Cliff, Melbourne Hall, York; *s.* Royal Success 8995, *d.* Wortley Belle 14873 *by* Sir Horace 5402.

Class 86.—*Harness Mares or Geldings, over* 14 *and not exceeding* 15 *hands.*

656 **I. (£15.)**—Mrs. James Putnam, for **Park Carnation.** (See Class 83.)
688 **II. (£10.)**—William S. Miller, Balmanno Castle, Bridge of Earn, N.B., for **Glenavon Charm** 25396, brown mare, born in 1917, bred by Enoch Glen, Bathgate; *s.* Harviestoun Mahratta 12650, *d.* Glenavon Pearl 23567 *by* Mathias 6473.
678 **III. (£5.)**—H. J. Colebrook, South Lodge, Iver Heath, Bucks, for **Fulmer Regent** G 227, chestnut gelding, born in 1917, bred by Henry Gilding, Rockpeed, Gateacre, Liverpool; *s.* Mathias 6473, *d.* Cudham Marjorie 20612 *by* Polonius 4931.
676 **IV. (£3.)**—H. J. Colebrook, for **Sanderstead Iris** 25390, brown bay mare, born in 1918, bred by E. D. Morton, Sanderstead Court, Surrey; *s.* Mathias A1 1075, *d.* 13 B Meadow Sweet 17117 *by* Polonius 4931.
700 **R. N.**—A. & L. Beldam, Bluntisham, St. Ives, for **Histon Sunlight.**

Class 87.—*Harness Mares or Geldings, over* 15 *hands.*

701 **I. (£15.)**—J. E. Rushworth, Eskdale, Bargate, Grimsby, for **Habrough Victor** G 168, dark bay gelding, born in 1914, bred by Joshua Ball, Southworth Hall, Warrington; *s.* King's Proctor 11102, *d.* Southworth Belle 17742 *by* Lord Drewton 2nd 6817.
661 **II. (£10.)**—Richard Belcher, for **Knight Commander.** (See Class 83.)
690 **III. (£5.)**—William S. Miller, Balmanno Castle, Bridge of Earn, N.B., for **Gondolier** G 177, chestnut gelding, born in 1917, bred by the late J. Makeague, Golborne Park, Newton-le-Willows; *s.* King's Proctor 11102, *d.* Pious Bonds 16103 *by* Polonius 4931.
697 **IV. (£3.)**—Joseph Smith, 56, Victoria Road East, Leicester, for **Leicester Fascination** 25438, chestnut mare, born in 1917, bred by J. O. Nicol, 142, London Road, Leicester *s.* Mathias 6473, *d.* Westfield Surprise 21744 *by* Paddock Polonius 7208.
681 **R. N.**—John Highst, for **Kentmere King.**

DOUBLE HARNESS.

Class 88.—*Pairs of Harness Mares or Geldings.*

691 **I. (£20, & Champion.[1])**—William S. Miller, Balmanno Castle, Bridge of Earn, N.B., for **Knight Errant** G 165, bay gelding, born in 1915, bred by Caleb Humphreys, Birkenhead; *s.* Mathias 6473, *d.* Calabar Canadian Girl 19815 *by* Garton Duke of Connaught 3009; and **Knight Templar** G 156, bay gelding, born in 1917, bred by John Chivers, Wychfield, Cambridge; *s.* Mathias 6473, *d.* Inverness Duchess of Connaught 15192 *by* Garton Duke of Connaught 3009.
655 & 657 **II. (£15, & R. N. for Champion.[1])**—Mrs. James Putnam, for **Buckley Fame** (see Class 82); and **Melbourne Fire** (see Class 85).
713 **III. (£10.)**—W. J. Smith, Ltd., 21, Little Cadogan Place, London, S.W., for **Cadogan Ophelian** and **Cadogan Rufus,** chestnut geldings.
665 **IV. (£5.)**—Mrs. Frederick E. Colman, Nork Park, Epsom Downs, for **Crystal of Nork** 23510, brown mare, born in 1913; *s.* Mathias 6473, *d.* Alla Breve 18863 *by* All Serene 8346; and **Serene of Nork** 24073, brown mare, born in 1914; *s.* Mathias 6473, *d.* Alla Breve 18863 *by* All Serene 8346.
675 & 676 **R. N.**—H. J. Colebrook, for **Netherfield Argenteau** and **Sanderstead Iris.**
H. C.—697 & 698. **C.**—693 & 694.

TANDEMS.

Class 89.—*Pairs of Harness Mares or Geldings.*

713 **I. (£20, & Champion.[2])**—W. J. Smith, Ltd., for **Cadogan Ophelian** and **Cadogan Rufus.** (See Class 88.)
655 & 657 **II. (£15, & R. N. for Champion.[2])**—Mrs. James Putnam, for **Buckley Fame** (see Class 82) and **Melbourne Fire** (see Class 85).
665 **III. (£10.)**—Mrs. Frederick E. Colman, for **Crystal of Nork** and **Serene of Nork.** (See Class 88.)
675 & 676 **IV. (£5.)**—H. J. Colebrook, for **Netherfield Argenteau** (see Class 80), and **Sanderstead Iris** (see Class 86).
697 & 698 **R. N.**—Joseph Smith, for **Leicester Fascination** and **Leicester Princess.**

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[1] Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Pair in Class 88.

[2] Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Tandem in Class 89.

Four-in-Hand Teams.

Class 90.—*Mares or Geldings.*

705 **I. (£30, & Champion.[1])**—W. A. Barron, 91, Westbourne Terrace, London, W., for four chestnuts.

709 **II. (£20, & R. N. for Champion.[1])**—Sir Edward Stern, Bt., 4, Carlton House Terrace, London, S.W.

710 **III. (£15.)**—W. W. Theobald, Bournside, Cheltenham, for four red roans.

CATTLE.

Shorthorns.

Class 91.—*Shorthorn Bulls, born in or before* 1919.

719 **I. (£15, & Champion.[2])**—Albert James Marshall, Bridgebank, Stranraer, for **Bridgebank Paymaster** 154308, light roan, born Jan. 28, 1919 ; *s.* Gainford Ringleader 136657, *d.* Princess Christina *by* Broadhooks Diamond 124530.

715 **II. (£10.)**—Sir Bernard Greenwell, Bt., Marden Park, Woldingham, Surrey, for **Pierrepont Golden Prince** 144426, dark roan, born May 10, 1917, bred by Earl Manvers, Holme Pierrepont, Nottingham ; *s.* Royal Sovereign 113193, *d.* Crocus 18th *by* Silverhill Snowflake 107057.

725 **III. (£5.)**—Misses A. F. and M. K. T. Scott, Netherswell Manor, Stow-on-the-Wold, for **Diamond Champion** 155320, dark roan, born April 14, 1919, bred by the late W. M. Scott, Netherswell Manor ; *s.* Windsor Lad 113735, *d.* Diamond Actress *by* Diamond Star 91479.

723 **R. N.**—Reginald Pease, Sledwich, Barnard Castle, for **Brandsby Marshall.**
H. C.—714. **C.**—724, 726, 727.

Class 92.—*Shorthorn Bulls, born on or between January* 1, 1920, *and March* 31, 1920.[3]

734 **I. (£15, & R. N. for Champion.[2])**—J. Shepherd, 1, Hatton Garden, London, E.C., for **Calrossie Regent** 161916, red, born March 1, bred by Captain J. MacGillivray, Calrossie, Nigg, Ross-shire ; *s.* D.S.O. 148517, *d.* Eillien *by* Millhills Rothes King 131020.

732 **II. (£10.)**—George Harrison, Gainford Hall, Darlington, for **Marden Adrian** 165167, roan, born Feb. 4, bred by Sir Bernard Greenwell, Bt., Marden Park, Woldingham ; *s.* Pierrepont Golden Prince 144426, *d.* Fairlawne Gold *by* Taskmaster 110389.

735 **III. (£5.)**—The Hon. Mrs. Bruce Ward, Godinton, Ashford, Kent, for **Godinton Grand Duke** 163580, dark roan, born Jan. 25 ; *s.* Dewlaps Royal Sovereign 125170, *d.* Bilsington Orphan 2nd *by* Bilsington Favourite 107898.

730 **R. N.**—Hugh Baker, Chedglow, Malmesbury, for **Counter March.**
H. C.—736. **C.**—737.

Class 93.—*Shorthorn Bulls, born on or between April* 1, 1920, *and December* 31, 1920.[3]

758 **I. (£15.)**—George Harrison, Gainford Hall, Darlington, for **Rickford Marquis** 166467, red, born June 1, bred by G. A. Wills, Langford Court Farm, Langford, Bristol ; *s.* Collynie Royal Regent 148043, *d.* Eliza Lotus *by* Marquis of Millhills 137868.

740 **II. (£10.)**—Hugh Baker, Chedglow, Malmesbury, for **Chedglow Mitre** 162116, red, born April 5 ; *s.* Abbot 123762, *d.* Chedglow Beauty *by* Gunthorpe Prince Royal 2nd 120560.

762 **III. (£5.)**—Edward Parke, Crake Hall, West Heslerton, Yorks, for **Allerston Standard,** 160698, red, born Oct. 8, bred by C. A. Hirst, Crake, West Heslerton, Yorks ; *s.* D.S.O. 148517, *d.* Allerston Marigold 16th *by* Boquhan Hector 135266.

751 **IV. (£3.)**—S. F. Edge, Gallops Homestead, Ditchling, Sussex, for **Vahan Palatine** 167753, red, born July 16 ; *s.* Prince of the Manor 132834, *d.* Rosemary 246th *by* Prince Palatine 117061.

756 **R. N.**—John Handley, Green Head, Milnthorpe, for **Badminton Rosebriar.**
H. C.—760. **C.**—741, 743, 744, 752, 759.

Class 94.—*Shorthorn Bulls, born on or between January* 1, 1921, *and March* 31, 1921.[3]

790 **I. (£15.)**—**Albert James Marshall, Bridgebank, Stranraer, for Moniack Guardsman, red, born Jan. 26, bred by John H. Gair, Easter Moniack, Kirkhill, Inverness-shire ; *s.* Kinellar Guardsman 156912, *d.* Clunes Nonpareil 4th 5278 *by* Lothian Bandmaster 143714.**

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[1] Gold Challenge Cup, value Fifty Guineas, given by a member of the R.A.S.E. for the best Team in Class 90.

[2] Champion Prize of £20 given by the Shorthorn Society, for the best Bull in Classes 91–96 A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Bull.

[3] Prizes given by the Shorthorn Society.

784 **II. (£10.)**—GEORGE HARRISON, Gainford Hall, Darlington, for **Doune Meteor,** white, born March 26, bred by the Earl of Moray, Doune Lodge, Doune ; *s.* Eclipse of Collynie 136344, *d.* Lady Hawthorn 2nd (Vol. 59, p. 813) *by* Dunglass Royalist 108496.

798 **III. (£5.)**—GEORGE A. WILLS, Langford Court Farm, Langford, Bristol, for **Rickford Boxer,** white, born Feb. 1 ; *s.* Collynie Royal Regent 148043, *d.* Lady Marcella (Vol. 63, p. 621) *by* Notlaw Boxer 127158.

797 **IV. (£3.)**—J. M. STRICKLAND, Bainesse, Catterick, for **Brandsby's Aristocrat 5th,** roan, born Feb. 20 ; *s.* Cudham Max 155167, *d.* Rosemary (Vol. 65, p. 1018) *by* Brandsby's Alderman 2nd 135321.

778 **R. N.**—GEORGE FRANK, Manor House, Marton-le-Moor, Ripon, for **Marton Grand Raider.**

776 **(Special, £5.**[1]**)**—G. R. C. FOSTER, Anstey Hall, Trumpington, Cambridge, for **Anstey Sultan,** red, born Feb. 28 ; *s.* Collynie Golden Knight 135819, *d.* Barrington Lassie (Vol. 63, p. 835) *by* Fragrant Lad 125592.

798, 839, 840 **(Special, £10.**[2]**)**—GEORGE A. WILLS, for **Rickford Boxer, Rickford Exciseman and Rickford Raider.**

H. C.—795. **C.**—781, 783.

Class 95.—*Shorthorn Bull, born on or between April* 1, 1921, *and June* 30, 1921.

800 **I. (£15.)**—H.R.H. THE PRINCE OF WALES, K.G., Stoke Climsland, Cornwall, for **King's Messenger,** white, born May 10 ; *s.* Christian King 147900, *d.* Myrtle's Dandy *by* Collynie Premier 124847.

839 **II. (£10.)**—GEORGE A. WILLS, Langford Court Farm, Langford, Bristol, for **Rickford Exciseman,** red, born June 1 ; *s.* Collynie Royal Regent 148043, *d.* Eliza Lotus (Vol. 65, p. 1204) *by* Marquis of Millhills 137868.

824 **III. (£5.)**—ALBERT JAMES MARSHALL, Bridgebank, Stranraer, for **Binghill Premier,** dark roan, born April 3, bred by J. Spencer, Binghill, Myrtle, Aberdeenshire ; *s.* Fairlawne Premier 155689, *d.* Thuster Gipsy Maiden (Vol. 66, p. 577) *by* Acetylene 129016.

840 **IV. (£3.)**—GEORGE A. WILLS, for **Rickford Raider,** white, born April 15 ; *s.* Collynie Royal Regent 148043, *d.* Rosewood Girl (Vol. 59, p. 666) *by* Strowan Clarion 110333.

821 **R. N.**—A. W. MACONOCHIE, Cudham, Kent, for **Cudham Golden Star.**

837 **(Special, £10.**[1]**)**—J. W. WHITTOME, Eastmoor, Doddington, Cambs, for **Adonis,** roan, born April 12 ; *s.* Great Scot 149208, *d.* Proud Missie 19th (Vol. 65, p. 1192) *by* Blythswood 135244.

H. C.—808, 817. **C.**—819, 827, 828.

Class 96.—*Shorthorn Bulls, born on or between July* 1, 1921, *and December* 31, 1921.[3]

843 **I. (£15.)**—MRS. HUTCHINSON, South Cerney, Cirencester, for **Cerney Pilgrim,** red, born July 30 ; *s.* Edgcote Albion 142205, *d.* Pure Gem (Vol. 59, p. 690) *by* Village Jeweller 107378.

847 **II. (£10.)**—J. M. STRICKLAND, Bainesse, Catterick, for **Brandsby's Lord Ramsden 3rd,** red, born July 1 ; *s.* Cudham Max 155167, *d.* Brandsby's Miss Ramsden 2nd (Vol. 62, p. 1118) *by* Brandsby's Aristocrat 4th 114422.

844 **III. (£5.)**—OLIVER W. PORRITT, Hotchley Farm, East Leake, Loughborough, for **Hotchley Advocate,** red, born Sept. 7 ; *s.* Shenley White Ensign 152033, *d.* Moresby Cumberland Augusta (Vol. 62, p. 683) *by* Lord Jubilant 106037.

846 **R. N.**—MISSES A. F. and M. T. SCOTT, Nether Swell Manor, Stow-on-the-Wold, for **Diamond Archer.**

H. C.—849. **C.**—841.

Class 97.—*Shorthorn Cows, in-milk, born in or before* 1918.

861 **I. (£15.)**—J. H. TOPPIN, Musgrave Hall, Skelton, Penrith, for **Mischief** (Vol. 65, p. 1158), white, born Sept. 27, 1918, calved Feb. 2, 1922 ; *s.* Masterkey 137896, *d.* Merry Maid *by* Baron Fitz Rosebud 94111.

851 **II. (£10.)**—G. L. T. BRUDENELL, Deene Park, Peterborough, for **Daisy of Viewfield** (Vol. 64, p. 1086), red, born June 29, 1917, calved Jan. 10, 1922, bred by John Macintosh, Viewfield, Rothiemay ; *s.* Cavalier 130102, *d.* Julia B *by* Anacreon 113896.

860 **III. (£5.)**—J. H. TOPPIN, for **Bright Princess** (Vol. 65, p. 1157), roan, born May 16, 1918, calved June 22 ; *s.* Masterkey 137896, *d.* Bright Rose *by* Midshipman 121584.

853 **R. N.**—GEORGE HENRY DRUMMOND, Pitsford Hall, Northampton, for **White Butterfly.**

860, 861, 938 **(Special, £15.**[2]**)**—J. H. TOPPIN, for **Bright Princess, Mischief** and **Bright Heroine.**

H. C.—856. **C.**—852, 854, 857, 858.

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[1] Two Special District Prizes given (I.) £10 by the Shorthorn Society. for the best Bull, (II.) £5 by the Cambridgeshire and Isle of Ely Agricultural Society for the second best Bull in Classes 94, 95 and 96, the property of Exhibitors residing in Cambridgeshire or Essex. A Silver Medal is given by the Shorthorn Society to the Breeder of the animal winning the £10 District Prize.

[2] Special Prizes of £15 First Prize, and £10 Second Prize, given by the Shorthorn Society for the best groups of three animals bred by Exhibitor in Classes 91-101.

[3] Prizes given by the Shorthorn Society.

Class 98.—*Shorthorn Heifers, in-milk, born in* 1919.

862 **I. (£15.)**—J. M. Strickland, Bainesse, Catterick, for **Brandsby's Princess 15th** (Vol. 66, p. 1045), roan, born Feb. 4, calved Oct. 23, 1921; *s.* Ardlethen Lavender Knight 140489, *d.* Brandsby's Princess *by* Bapton Judge 82768.

863 **II. (£10.)**—The Hon. Mrs. Bruce Ward, Godinton, Ashford, Kent, for **Bilsington Rosebud 11th** (Vol. 66, p. 1095), white, born Jan. 12, calved Feb. 3, 1922, bred by the Exors. of the late R. J. Balston, Bilsington Priory, Ashford, Kent; *s.* Dewlaps Royal Sovereign 125170, *d.* Bilsington Rosebud 7th *by* Bilsington Archer 119025.

Class 99.—*Shorthorn Heifers, born in* 1920.

864 **I. (£15, & Champion.[1])**—His Majesty the King, The Royal Farms, Windsor, for **Windsor Broadhooks** 9631, red, born Feb. 21; *s.* Eclipse of Collynie 136344, *d.* Doune Broadhooks 5th *by* Dunglass Brilliant 120003.

885 **II. (£10.)**—Oliver W. Porritt, Hotchley Farm, East Leake, Loughborough, for **Hotchley Countess** 17095, roan, born Sept. 19; *s.* Sanquhar Grand Courtier 139193, *d.* Gypsy Countess 3rd *by* Phingask Comet 109627.

870 **III. (£5.)**—Mrs. Cass, St. Helens, Ribston, Wetherby, for **Swinton Beauty** 10247, roan, born July 25, bred by Major Clive Behrens, Swinton Grange, Malton; *s.* Engineer 120145, *d.* Beauty 11th *by* Collingwood 130284.

871 **IV. (£3.)**—Sir Richard Cooper, Bt., M.P., Billington, Leighton Buzzard, for **Billington Augusta** 11612, dark roan, born April 2; *s.* Hean Lancelot 142875, *d.* Shenstone Augusta 1754 *by* Macebearer 126693.

865 **R. N.**—H.R.H. The Prince of Wales, K.G., Stoke Climsland, Cornwall, for **Queen Marion.**

H. C.—884. **C.**—866, 878, 881.

Class 100.—*Shorthorn Heifer, born on or between January* 1, 1921, *and March* 31, 1921.

903 **I. (£15, & R. N. for Champion.[1])**—George Harrison, Gainford Hall, Darlington, for **Gainford Missie 2nd,** white, born Jan. 26; *s.* Gainford Premier 155931, *d.* Whitehall Missie (Vol. 65, p. 1014) *by* Doune Marshall 130661.

897 **II. (£10.)**—J. A. K. Falconer, Calmsden Manor, Cirencester, for **Sarcasm 106th,** roan, born Jan. 2; *s.* Cluny Clipper Star 154871, *d.* Sarcasm 79th (Vol. 65, p. 737) *by* Secret Sign 122804.

891 **III. (£5.)**—Lt.-Col. Ernest Clive Atkins, Stretton House, Hinckley, for **Oxford Duchess 85th,** white, born March 4, bred by D. Aldridge, Sketchley Hall, Hinckley; *s.* Cherry Picker 147876, *d.* Oxford Duchess of Calthwaite 84th *by* Duke of Whitehall 136251.

904 **IV. (£3.)**—Mrs. Hutchinson, South Cerney, Cirencester, for **Cerney Petunia,** roan, born Jan. 14; *s.* Edgcote Albion 142205, *d.* Aldsworth Pansy (Vol. 59, p. 693) *by* Nonpareil Gift 109536.

916 **R. N.**—The Hon. Mrs. Bruce Ward, Godinton, Ashford, Kent, for **Godinton Jilt.**

H. C.—914. **C.**—896, 902, 909.

Class 101.—*Shorthorn Heifers, born on or between April* 1, 1921, *and December* 31, 1921.

922 **I. (£15.)**—L. V. Garland, Greenbank, The Towans, Hayle, Cornwall, for **Towan Beauty,** roan, born April 29; *s.* Butterfly Leader 154520, *d.* Hayle Beauty Sleep 4th (Vol. 65, p. 867) *by* Clipper Comet 135764.

938 **II. (£10.)**—J. H. Toppin, Musgrave Hall, Skelton, Penrith, for **Bright Heroine,** roan, born April 2; *s.* Hean Conqueror 131411, *d.* Bright Pearl (Vol. 60, p. 1114) *by* Sanquhar Sentinel 110087.

918 **III. (£5.)**—Major George Kelsey Burge, Dent-de-Lion, Westgate-on-Sea, for **Thanetonian Dewlap,** roan, born June 3; *s.* Godinton Recompense 156064, *d.* Dewlap 14th (Vol. 66, p. 1095) *by* Bilsington Vanguard 129670.

920 **IV. (£3.)**—S. F. Edge, Gallops Homestead, Ditchling, Sussex, for **Vahan Beauty 4th,** roan, born June 2; *s.* Vahan Victor 146075, *d.* Vahan Beauty 2nd (Vol. 64, p. 876) *by* Edgcote Chancellor 120077.

931 **R. N.**—A. W. Maconochie, Cudham, Kent, for **Cudham Clara 9th.**

H. C.—937. **C.**—924, 929, 932, 936.

Dairy Shorthorns.

Class 102.—*Dairy Shorthorn Bulls, born in or before* 1919.

953 **I. (£15, & R. N. for Champion.[2])**—Robert N. Tory, Anderson, Blandford, for **Kelmscott Conjuror 3rd** 137269, dark roan, born June 12, 1916, bred by R. W. Hobbs & Sons, Kelmscott, Lechlade; *s.* Kelmscott Acrobat 4th 126217 *d.* Helpmate 15th *by* Kelmscott Tarquin 105853.

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[1] Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 97–101. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Cow or Heifer.

[2] Champion Prize of £10 given by the Dairy Shorthorn Association for the best Bull in Classes 102–106.

954 **II. (£10.)**—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Baron's Pride** 153824, roan, born Nov. 24, 1919; *s.* Rockley Baronet 144978, *d.* Rockley Barrington *by* Oxford Count 108592.

943 **III. (£5.)**—Chivers & Sons, Ltd., Histon, Cambridge, for **Histon Wild Prince** 156497, dark roan, born March 11, 1919; *s.* Royal Foggathorpe 133300, *d.* Wild Queen 29th *by* Danger Signal 108337.

950 **R. N.**—C. J. K. Maurice and S. E. Ashton, Manton Grange, Marlborough and Scotsgrove, Thame, for **Preshute Bandit.**

954, 1034, 1058 **(Cup.[1])**—The Duke of Westminster, G.C.V.O., D.S.O., for **Baron's Pride, Cherry Bud 6th** and **Katie.**

H. C.—942, 951.

Class 103.—*Dairy Shorthorn Bulls, born in* 1920.

956 **I. (£15, & Champion.[2])**—T. and S. Braithwaite, Fieldgrove, Bitton, Glos., for **Kelmscott Conjuror 36th** 164373, red, born April 26, bred by R. W. Hobbs & Sons, Kelmscott, Lechlade; *s.* Kelmscott Acrobat 4th 126217, *d.* Hawthorn 9th *by* Royal Hampton 11th 96908.

960 **II. (£10.)**—Captain the Hon. E. A. FitzRoy, M.P., Foxhill, West Haddon, Rugby, for **Foxhill Springtime** 163353, roan, born Jan. 31; *s.* Afterthought 146582, *d.* Telluria May 4th *by* Gerome of Highfields 98918.

959 **III. (£5.)**—Ellice Ezra, Lock, Partridge Green, Sussex, for **Lock Somerset 2nd** 164885, white, born Oct. 21; *s.* Proud Victor 151279, *d.* Thurnham Somerset 3rd *by* Imperator 115945.

955 **R. N.**—T. and S. Braithwaite, for **Fieldgrove Conjuror.**

H. C.—958, 961.

Class 104.—*Dairy Shorthorn Bulls, born on or between January* 1, 1921, *and March* 31, 1921.[3]

985 **I. (£15.)**—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Eaton Bold Baron,** roan, born Jan. 2; *s.* Rockley Baron 144977, *d.* Lucy Millicent (Vol. 63, p. 887) *by* Mealsgate Felix 116527.

986 **II. (£10.)**—Major S. P. Yates, Broughton Grange, Banbury, for **Telluria Nix,** roan, born March 14; *s.* Nothing Doing 150840, *d.* Telluria N. 5th (Vol. 59, p. 707) *by* Dairyman Mere 108328.

974 **III. (£5.)**—Major Gerard J. Buxton, Tockenham Manor, Wootton Bassett, Wilts, for **Tockenham Solus 12th,** red and little white, born Jan. 21; *s.* Kelmscott Solus 137306, *d.* Musical Lass (Vol. 62, p. 688) *by* Tockenham Waterloo 128516.

972 **R. N.**—George Bickford, Somerford, Brewood, Staffs, for **Somerford Duke.**

H. C.—975. **C.**—979.

Class 105.—*Dairy Shorthorn Bulls, born on or between April* 1, 1921, *and June* 30, 1921.[3]

993 **I. (£15.)**—Ellice Ezra, Lock, Partridge Green, Sussex, for **Lock Dairyman,** white, born May 12; *s.* Proud Victor 151279, *d.* Lacy Welcome (Vol. 65, p. 1027) *by* Dairyman 130512.

999 **II. (£10.)**—Montague Perkins, Lower Bogmarsh, Holme Lacy, Hereford, for **Holmlacy Baron,** born April 20; *s.* Ringlet's Boy 158823, *d.* Lacy Barrington (Vol. 64, p. 1185) *by* Dairyman 130512.

987 **III. (£5.)**—D. Aldridge, Sketchley Hall Farm, near Hinckley, for **Premier Beau,** red and little white, born May 17; *s.* Premier Prince 144499, *d.* Daisy Queen (Vol. 62, p. 961) *by* Lord Nottingham 116317.

996 **R. N.**—F. S. Francis, Stowell House, Templecombe, Somerset, for **Colescombe Dolphin.**

H. C.—997, 1000. **C.**—990, 1004.

Class 106.—*Dairy Shorthorn Bulls, born on or between July* 1, 1921, *and December* 31, 1921.

1021 **I. (£15.)**—F. H. Thornton, Kingsthorpe Hall, Northampton, for **Kingsthorpe Charming Duke,** white, born July 17; *s.* Kingsthorpe Dairy Pilot 156966, *d.* Kingsthorpe Charmer (Vol. 66, p. 1065) *by* Kingsthorpe Regent 143350.

1012 **II. (£10.)**—Captain the Hon. E. A. FitzRoy, M.P., Foxhill, West Haddon, Rugby, for **Foxhill Caryl,** roan, born Sept. 22; *s.* John Wild Eyes 149616, *d.* Clifford Lady Carl (Vol. 63, p. 678) *by* Knight 131802.

1020 **III. (£5.)**—Eustace Abel Smith, Longhills, Lincoln, for **Longhills Musician,** roan, born July 31; *s.* Babraham Lord Price 140547, *d.* Longhills Melody (Vol. 65, p. 1105) *by* Kelmscott Acrobat 9th 131660.

1008 **R. N.**—John Bailey, The Braes Farm, South Nutfield, Redhill, for **Silverstream Barrington Boy.**

H. C.—1017.

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[1] Silver Challenge Cup, value 100 guineas, given through the Dairy Shorthorn Association for the best group of one Bull and two Cows or Heifers in Classes 102–110. Two at least of the animals must have been bred by the Exhibitor.

[2] Champion Prize of £10 given by the Dairy Shorthorn Association for the best Bull in Classes 102–106.

[3] Prizes given by the Dairy Shorthorn Association.

Class 107.—*Dairy Shorthorn Cows, in-milk, born in or before* 1915.[1]

1034 **I. (£15, & Champion.[2])**—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Cherry Bud 6th** (Vol. 64, p. 974), dark roan, born Jan. 5, 1915, calved June 28, 1922, bred by W. Hope, Longmoor House, Wigton; *s.* Prince of Orange 109726, *d.* Cherry Bud 3rd *by* Nugget 96266.

1036 **II. (£10.)**—Major S. P. Yates, Broughton Grange, Banbury, for **Fair Rosamond** (Vol. 59, p. 514), roan, born Sept. 1, 1910, calved June 9, 1922, bred by Mrs. G. Handy, Hampen, Andoversford; *s.* Sub-Inspector 100818, *d.* Rosamond 7th *by* Pegglesworth Pearlsetter 75208.

1030 **III. (£5.)**—J. Pierpont Morgan, Wall Hall, Aldenham, Watford, Herts, for **Cockerham Barrington 2nd** (Vol. 61, p. 933), red, born June 30, 1914, calved May 13, 1922, bred by Nelson & Sons, Cockerham Hall, Garstang; *s.* Dandy 114984, *d.* Countess of Barrington 25th *by* Eden Baronet 105384.

1032 **R. N.**—J. M. Strickland, Bainesse, Catterick, for **Keyingham Dairymaid 5th.**

1034, 1058, 1085 **(Cup.[3])**—The Duke of Westminster, G.C.V.O., D.S.O., for **Cherry Bud 6th, Katie,** and **Bare Primrose.**

H. C.—1028.

Class 108.—*Dairy Shorthorn Cows, in-milk, born in* 1916 *or* 1917.[1]

1060 **I. (£15, & R. N. for Champion.[2])**—Captain Arnold S. Wills, Thornby Hall, Northampton, for **Thornby Foggathorpe 7th** (Vol. 64, p. 1391), white, born June 3, 1917, calved June 1, 1922; *s.* Drusus 115142, *d.* Thornby Foggathorpe 2nd *by* Dreadnought 102049.

1042 **II. (£10.)**—Chivers & Sons, Ltd., Histon, Cambridge, for **Histon Wild Queen** (Vol. 64, p. 803), red, born Sept. 2, 1917, calved May 11, 1922; *s.* Histon Milkman 131498, *d.* Wild Queen 34th *by* Dauntless 111497.

1058 **III. (£5.)**—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Katie** (Vol. 64, p. 1372), red, born May 3, 1917, calved June 9, 1922; *s.* Leek Conjuror 121142, *d.* Kathleen 4th *by* Tyne Master 123348.

1053 **R. N.**—Alfred Palmer, Wokefield Park, Mortimer, Berks, for **Wokefield Cowslip 3rd.**

H. C.—1043. **C.**—1054.

Class 109.—*Dairy Shorthorn Cows, in-milk, born in* 1918.

1085 **I. (£15.)**—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Bare Primrose** (Vol. 65, p. 815), light roan, born Oct. 22, calved May 28, 1922, bred by R. Hall, Torrisholme Hall, Morecambe; *s.* Bare Record 129415, *d.* Biglands Irwin *by* Micklethwaite Magnet 4th 102061.

1072 **II. (£10.)**—G. P. Golden, Eaglesfield, Leire, Lutterworth, for **Lady Doreen 2nd** (Vol. 65, p. 793), red and little white, born Feb. 23, calved May 18, 1922; *s.* Baron Wildeyes 2nd 134982, *d.* Dorcas *by* Conjuror 91310.

1071 **III. (£5.)**—G. P. Golden, for **Lady Ivanhoe** (Vol. 65, p. 793), roan, born Aug. 18, calved April 15, 1922; *s.* Gilmorton Lad 131183, *d.* Babraham Raindrop *by* Babraham Mosstrooper 104606.

1078 **IV. (£3.)**—Herbert H. Owtram, Newland Hall, near Lancaster, for **Newland Nelly Lee** (Vol. 65, p. 1009), roan, born Feb. 26, calved June 20, 1922; *s.* Mayflower Boy 116518, *d.* Nelly Swinlees *by* Fota Beethoven 105521.

1068 **R. N.**—Mrs. FitzHugh, Plas Power, Wrexham, for **Plas Power Cran.**

H. C.—1063, 1088. **C.**—1065, 1075.

Class 110.—*Dairy Shorthorn Heifers, in-milk, born in* 1919.

1096 **I. (£15.)**—T. and S. Braithwaite, Fieldgrove, Bitton, Glos., for **Sybil 34th** 4057, roan, born Feb. 18, calved June 25, 1922, bred by R. W. Hobbs & Sons, Kelmscott, Lechlade; *s.* Kelmscott Conjuror 4th 137270, *d.* Sybil 20th *by* Cranford Freemason 114883.

1111 **II. (£10.)**—Robert W. Kaye, Great Glen Manor, Great Glen, Leicester, for **Rossall Seraphina 5th** 1687, light roan, born Aug. 9, calved March 30, 1922, bred by Robert Cock, Rossall Grange, Fleetwood, Lancs.; *s.* Roysterer 145190, *d.* Rossall Seraphina *by* Kirkstyle 116125

1095 **III. (£5.)**—George Bickford, Somerford, Brewood, Staffs, for **Nordley Duchess** 8699, roan, born Sept. 6, calved May 21, 1922, bred by Col. E. M. Wakeman, Coton Hall, Bridgnorth; *s.* Somerford Drummer 145598, *d.* Nordley Princess 3rd *by* Somerford Count 117822.

1119 **IV. (£3.)**—F. H. S. Perkins, Wyecroft, Monmouth, for **Hadnock Charming Lass 23rd** 6603, roan, born Aug. 1, calved June 1, 1922; *s.* Hadnock Ranger 142788, *d.* Hadnock Charming Lass 16th *by* Fairy Minstrel 125489.

1122 **R. N.**—F. H. Thornton, Kingsthorpe Hall, Northampton, for **Ecton Merry Belle 8th.**

H. C.—1093, 1124.

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[1] Prizes given by the Shorthorn Society.

[2] Champion Prize of £10 given by the Shorthorn Society for the best Cow or Heifer in Classes 107–110. A Silver Medal is given by the Shorthorn Society to the Breeder of the Champion Dairy Shorthorn Cow.

[3] Silver Challenge Cup, value Fifty Guineas, given through the Dairy Shorthorn Association for the best group of three Cows or Heifers in Classes 107–110.

Non-Pedigree Dairy Shorthorns.

Class 111.—*Non-Pedigree Dairy Shorthorn Cows or Heifers, in-milk.*[1]

1131 **I. (£15.)**—J. L. Shirley, Silverton, Woughton, Bletchley, for **Graceful,** roan, age and breeder unknown, calved May 14, 1922.

1129 **II. (£10.)**—Charles J. Beechener, Green Farm, Barton-in-the-Clay, Ampthill, for **Faldo Queen,** roan, born Aug. 29, 1917, calved June 18, 1922 ; *s.* Stondon Enterprise.

1128 **III. (£5.)**—James Batten, Hoo Fields Farm, Thurlaston, Hinckley, for **Stella,** roan, age and breeder unknown, calved April 25, 1922.

Lincolnshire Red Shorthorns.

Class 112.—*Lincolnshire Red Shorthorn Bulls, born in or before* 1919.

1135 **I. (£15, & Champion.[2])**—William A. Harrison, The North Lodge, near Grantham, for **Horkstownian Premier** 14605, born Jan. 3, 1918, bred by E. J. Turton, Horkstow, Hull ; *s.* Welbourne Victorious 12145, *d.* Horkstownian Maiden *by* Marshman 7th 9193.

1140 **II. (£10.)**—Lt.-Col. Sir A. G. Weigall, K.C.M.G., Petwood, Woodhall Spa, for **Kirmington Ruby King 63rd** 15589, born June 5, 1919, bred by G. Marris, Kirmington, Brocklesby, Lincs. ; *s.* Scampton Result 12879, *d.* Kirmington Rose 41st *by* Kirmington Wandering Chief 6182.

1133 **III. (£5.)**—Ashley Brothers, Deepden Farm, Godmanchester, Hunts, for **Pendley Reality** 13745, born June 15, 1917, bred by J. G. Williams, Pendley Manor, Tring ; *s.* Scampton King of the Rubies 7122, *d.* Pendley Beauty *by* Magnum Bonum 4914.

1139 **R. N.**—Butler Smith, The Fields, Cropwell Butler, near Nottingham, for **Risby General.**

Class 113.—*Lincolnshire Red Shorthorn Bulls, born in* 1920.

1143 **I. (£15, & R. N. for Champion.[2])**—George Coleman, Manor Farm. Wood Walton, Peterborough, for **Wood Walton Prince** 17175, born April 10 ; *s.* Horkstownian Onyx 13565, *d.* Deeping Dolly 2nd *by* Scampton Martyr 8516.

1141 **II. (£10.)**—Rowland F. Aubrey, Weybridge, Ellington, Hunts, for **Weybridge Pendley Chancellor** 17133, born Feb. 4, bred by Pendley Stock Farms, Pendley Manor, Tring ; *s.* Scampton Quality 11912, *d.* Queen's Flower *by* Flower King 4818.

1147 **III. (£5.)**—Alfred Lewis, Soignée, Westacre, King's Lynn, for **Strubby Croxton 6th,** born July 20, bred by J. W. Farrow & Sons, Strubby Manor, Alford, Lincs. ; *s.* Strubby Croxton Ruby 33rd 14933, *d.* Lady Cardiff 9th No. 84 *by* Strubby Nonpareil Bonus 8552.

1142 **R. N.**—Charles F. Bett, Springfield, Benniworth, Lincoln, for **Benniworth Boston 1st.**

H. C.—1145.

Class 114.—*Lincolnshire Red Shorthorn Bulls, born in* 1921.[3]

1150 **I. (£15.)**—E. M. and S. M. Grantham, The Rookery, West Keal, Spilsby, for **Anwick Perfection,** born March 2, bred by C. Bembridge, Walcott, Lincoln ; *s.* Beacon Hill Tommy 13190, *d.* Anwick Laurie 2nd (Vol. 18, p. 254) *by* Dunoby Red 4th 6776.

1151 **II. (£10.)**—Major T. Jessop, Harrington Hall, Spilsby, Lincs., for **Harrington Bert,** born May 6 ; *s.* Beacon Hill Thomas 13188, *d.* Pendley Yarborough Ruby (Vol. 25, p. 408) *by* Saltfleet Marshman 4958.

1152 **III. (£5.)**—A. Preston Jones, Mickleover House, near Derby, for **Mickleover Tothill Royal 2nd,** born May 10, bred by G. R. Needham, Moat House, Bilsby, Alford, Lincs. ; *s.* Pendley Record 13746, *d.* Tothill Busby (Vol. 26, p. 388) *by* Busby Nonsuch 2nd 15171.

1156 **R. N.**—Lt.-Col. Sir A. G. Weigall, K.C.M.G., Petwood, Woodhall Spa, for **Kirmington Normanby.**

H. C.—1155. **C.**—1148.

Class 115.—*Lincolnshire Red Shorthorn Cows or Heifers, in-milk, born in or before* 1919.

1159 **I. (£15, & R. N. for Champion.[4])**—Major H. Cooper, Flawborough, Orston, Notts, for **Flawborough Perfection** (Vol. 26, p. 327), born July 14, 1919, calved Feb. 12, 1922 ; *s.* Flawborough Chieftain 12518, *d.* Flawborough Sunspot *by* Rising Star 7839.

1162 **II. (£10.)**—T. H. B. Freshney, Worlaby, Brigg, for **Saltfleet Red Rose** (Vol. 27, p. 508), born July 28, 1919, calved April 5, 1922 ; *s.* Cockerington Hallington 2nd 11437 *d. by* Croxton Ruby 50th 9803.

1158 **III. (£5.)**—Rowland F. Aubrey, Weybridge, Ellington, Hunts., for **Weybridge Burton** (Vol. 27, p. 333), born in Aug., 1917, calved May 11, 1922, bred by the Buxton Lime Firms Co., Buxton ; *s.* Curlieu Nonsuch 10630, *d.* Burton Ruby 20th *by* Burton Triumph 8855.

1164 **R. N.**—A. Preston Jones, Mickleover House, near Derby, for **Flawborough Gem.**

H. C.—1168. **C.**—1163.

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[1] Prizes given by the Dairy Shorthorn Association.

[2] Champion Silver Cup value £10 given by the Lincolnshire Red Shorthorn Association for the best Bull in Classes 112–114.

[3] Prizes given by the Lincolnshire Red Shorthorn Association.

[4] Champion Silver Cup value £10 given by the Lincolnshire Red Shorthorn Association for the best Cow or Heifer in Classes 115–118.

Class 116.—*Lincolnshire Red Shorthorn Cows or Heifers, in-milk, born in or before* 1919, *showing the best milking properties.*[1]

1173 I. (£15.)—JOHN EVENS & SON, Burton, Lincoln, for **Burton Diligent** (Vol. 26, p. 331), born in October, 1917, calved May 28, 1922, bred by C. J. C. Hill, Glentworth, Lincoln; *s.* Otby Alford 16th 16745, *d.* Diligent *by* Bonby Tourist 12th 9646.

1181 II. (£10.)—LT.-COL. SIR A. G. WEIGALL, K.C.M.G., Petwood, Woodhall Spa, for **Petwood Ella** (Vol. 24, p. 448), born April 13, 1917, calved June 17, 1922; *s.* Petwood Dragoon 11834, *d.* Scamblesby Ella *by* Dursby Red 6th 7542.

1179 III. (£5.)—CHARLES E. SCORER, Whitehall, Bracebridge Heath, Lincoln, for **Bracebridge No. 61** (Vol. 23, p. 350), born Dec. 16, 1916, calved May 25, 1922; *s.* Normanby Milkman 10098, *d.* Bracebridge No. 52 *by* Bletchingley Euripides 8742.

1180 R. N.—CHARLES E. SCORER, for **Sudbrook No. 125c.**

H. C.—1174, 1176. C.—1177.

Class 117.—*Lincolnshire Red Shorthorn Heifers, born in* 1920.

1194 I. (£15, & Champion.[2])—A. PRESTON JONES, Mickleover House, near Derby, for **Mickleover Tattle** (Vol. 27, p. 568), born April 16; *s.* Scampton Recruit 12874, *d.* Mickleover Cice *by* Ormsby Champion 8443.

1191 II. (£10.)—WILLIAM A. HARRISON, The North Lodge, near Grantham, for **Harlaxton Aubrey** (Vol. 27, p. 537), born March 31; *s.* Horkstownian Premier 14605, *d.* Harlaxton Deeping Princess *by* Deeping Curly Coat 2nd 10639.

1189 III. (£5.)—WILLIAM GRANT, Skinnand, Navenby, Lincoln, for **Skinnand Scampton**, born June 3; *s.* Village Beau 12104, *d.* Scampton Hester *by* Anderby Pilot 5793.

1192 R. N.—MAJOR T. JESSOP, Harrington Hall, Spilsby, for **Harrington Amba.**

H. C.—1183, 1190, 1196, 1197. C.—1193, 1198.

Class 118.—*Lincolnshire Red Shorthorn Heifers, born in* 1921.[1]

1202 I. (£15.)—MAJOR H. COOPER, Flawborough, Orston, Notts, for **Flawborough Primula**, born Jan. 18; *s.* Flawborough Chief (Vol. 27, p. 434), *d.* Flawborough Lily (Vol. 26, p. 326) *by* Croxton Ruby 50th 9803.

1205 II. (£10.)—WILLIAM A. HARRISON, The North Lodge, near Grantham, for **Harlaxton Bountiful**, born Feb. 4; *s.* Horkstownian Premier 14605, *d.* Harlaxton Curly Horn (Vol. 26, p. 350) *by* Scampton Judge 6327.

1204 III. (£5.)—T. H. B. FRESHNEY, Worlaby, Brigg, for **Saltfleet Bijou**, born March 29; *s.* Ben 14223, *d.* Hallington Bijou (Vol. 27, p. 504) *by* Rising Star 7839.

1201 R. N.—GEORGE COLEMAN, Manor Farm, Wood Walton, Peterborough, for **Wood Walton Guzel 2nd.**

H. C.—1200, 1210. C.—1207.

Herefords.

Class 119.—*Hereford Bulls, born in or before* 1919.

1216 I. (£15.)—KENNETH W. MILNES, The Field, Hereford, for **Larder** 37146, born Jan. 7, 1919; *s.* Hermit 32602, *d.* Neckchain *by* Sir James 26489.

1213 II. (£10.)—PERCY E. BRADSTOCK, Free Town, Tarrington, Hereford, for **Koh-I-Nor** 37124, born Jan. 12, 1918; *s.* Goodenough 33710, *d.* Princess *by* Prince Charming 29982.

1215 III. (£5.)—J. K. HYSLOP, Ivington, Leominster, for **Ivington Ranger** 37015, born Jan. 15, 1919; *s.* Newton Division 32840, *d.* Ripe 4th *by* Rougemont 20296.

1214 R. N.—CECIL R. ENGLISH, Evesbatch Court, Bishops Frome, for **Brampton James.**

Class 120.—*Hereford Bulls, born in* 1920.

1227 I. (£15, & Champion[3])—CHARLES H. TINSLEY, Twyford, Pembridge, for **Twyford Fairy Boy** 40171, born Jan. 16; *s.* Bounds Investment 36087, *d.* Fairy Girl 3rd *by* Sir Albert 33126.

1228 II. (£10.)—H. WESTON & SONS, The Bounds, Much Marcle, Dymock, for **Bounds Knight** 38636, born Feb. 2; *s.* Alders Protector 34537, *d.* Merry Lass *by* Buckland Captain 26706.

1221 III. (£5.)—LORD CAWLEY, Berrington Hall, Leominster, for **Coniston** 38860, born Jan. 4; *s.* Bounds Imperialist 36077, *d.* Coney *by* Weston Speculator 29453.

1229 R. N.—OWEN WILLIAMS, Crossways, Cowbridge, for **Crossways Chef.**

H. C.—1230. C.—1218, 1220.

Class 121.—*Hereford Bulls, born in January,* 1921.[4]

1243 I. (£15, & R. N. for Champion.[3])—E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury, for **Eyton Meddler**, born Jan. 4; *s.* Bodenham Garfield 36034, *d.* Eyton Satire 4th (Vol. 50, p. 929) *by* Prince Charming 29982.

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[1] Prizes given by the Lincolnshire Red Shorthorn Association.

[2] Champion Silver Cup value £10 given by the Lincolnshire Red Shorthorn Association for the best Cow or Heifer in Classes 115–118.

[3] Champion Prize of £10 10*s.* given by the Hereford Herd Book Society for the best Bull in Classes 119–123.

[4] Prizes given by the Hereford Herd Book Society.

1236 **II.** (£10.)—Henry James Dent, Perton Court, Stoke Edith, Herefordshire, for **Perton Defence** 21461, born Jan. 1; *s.* Sunclad 28762, *d.* Ivington Lass 50th *by* Eaton Silver 29692.
1245 **III.** (£5.)—A. W. Trotman, Byford Court, Hereford, for **Byford Return** 40630, born Jan. 2; *s.* America 34550, *d.* Rarity *by* Sir Sam 33131.
1238 **R. N.**—Kenneth W. Milnes, The Field, Hereford, for **Nonpariel.**
H. C.—1241. **C.**—1232, 1239.

Class 122.—*Hereford Bulls, born in February*, 1921.[1]

1252 **I.** (£15.)—William Smith, The Leen, Pembridge, for **Freetown Warrior** 40971, born Feb. 20, bred by P. E. Bradstock, Free Town, Tarrington, Hereford; *s.* Aldersend Napier 35844, *d.* Golden Treasure *by* Laureate 11th 33826.
1248 **II.** (£10.)—Percy E. Bradstock, Free Town, Tarrington, Hereford, for **Free Town Monarch,** born Feb. 5; *s.* Koh-I-Nor 37124, *d.* Topsy (Vol. 50, p. 385) *by* Lynch Drifter 30752.
1251 **III.** (£5.)—Captain R. T. Hinckes, Mansel Court, Hereford, for **Mansel Morning Luck,** born Feb. 13; *s.* Crossways Othello 38396, *d.* May Morning (Vol. 50, p. 611) *by* Kismet 29167.
1249 **R. N.**—George H. Drummond, Pitsford Hall, Northampton, for **Merryman of Pitsford.**

Class 123.—*Hereford Bulls, born in* 1921 *on or after March* 1.[1]

1265 **I.** (£15.)—H. Weston & Sons, The Bounds, Much Marcle, Dymock, for **Bounds Lordship** 40546, born March 5; *s.* Bounds Improver 36079, *d.* Diana 2nd *by* Weston Prince 31175.
1264 **II.** (£10.)—W. H. Wass, Gattertop, Leominster, for **Gattertop Eclipse,** born March 3; *s.* Salacious 39989, *d.* Tilda (Vol. 48, p. 936) *by* Sunclad 28762.
1254 **III.** (£5.)—Sir J. R. G. Cotterell, Bt., Garnons, Hereford, for **Troubadour 2nd,** born March 1; *s.* Minstrel 37434, *d.* Ladylove (Vol. 43, p. 278) *by* Old Sort 24826.
1261 **R. N.**—T. R. Thompson, Birchwood Hall, near Malvern, for **Beanhouse Resolute.**
H. C.—1258. **C.**—1266.

Class 124.—*Hereford Cows or Heifers, in-milk, born in or before* 1919.

1272 **I.** (£15, & **Champion.**[2])—Charles H. Tinsley, Twyford, Pembridge, for **Wise Money** (Vol. 46, p. 1043), born Feb. 16, 1914, calved Jan. 9, 1922; *s.* Even Money 28261, *d.* Sally Wise *by* Shucknall Royal 27220.
1269 **II.** (£10.)—J. A. Hill, Orleton Manor, Brimfield, for **Orleton Mystery** (Vol. 50, p. 604), born March 30, 1919, calved Jan. 14, 1922; *s.* Newton Monster 34060, *d.* Mystery *by* Bendigo 25140.
1274 **III.** (£5.)—Owen Williams, Crossways, Cowbridge, for **Augusta** (Vol. 46, p. 590), born Feb. 21, 1914, calved April 24, 1922, bred by S. C. Hayter, Twyford, Pembridge; *s.* Rouge-et-Noir 27840, *d.* Alice *by* Jack Tar 22252.
1268 **R. N.**—W. H. Depper, Dean Park, Tenbury, for **Derwent.**
H. C.—1267.

Class 125.—*Hereford Heifers, born in* 1920.

1275 **I.** (£15.) His Majesty The King, The Royal Farms, Windsor, for **Radiance 2nd** (Vol. 51, p. 252), born Feb. 17; *s.* Twyford Triumph 35704, *d.* Radiance *by* Broadwood Gambler 26694.
1281 **II.** (£10.)—Cecil R. English, Evesbatch Court, Bishop's Frome, for **Rose Curly** (Vol. 51, p. 369), born Jan. 7; *s.* Vandal 31144, *d.* Evesbatch Curly 10th *by* Carbine 28132.
1278 **III.** (£5.)—F. and F. B. Bibby, Hardwicke Grange, Shrewsbury, for **Clive Vanity 2nd,** born Feb. 13; *s.* Shucknall Prince 33124, *d.* Clive Sparkle 2nd *by* Coup-de-Or 29016.
1287 **R. N.**—Owen Williams, Crossways, Cowbridge, for **Crossways Olivia.**
H. C.—1279. **C.**—1276, 1277.

Class 126.—*Hereford Heifer, born in* 1921.

1304 **I.** (£15, & **R. N. for Champion.**[2])—T. R. Thompson, Birchwood Hall, near Malvern, for **Butterpat** (Vol. 52, p. 645), born Jan. 14; *s.* Resolute 35537, *d.* Beryl *by* Lord Lieutenant 22323.
1294 **II.** (£10.)—Percy E. Bradstock, Free Town, Tarrington, Hereford, for **Sensation,** born Jan. 5; *s.* Aldersend Napier 35844, *d.* Silver (Vol. 50, p. 672) *by* Union Jack 31136.
1298 **III.** (£5.)—George H. Drummond, Pitsford Hall, Northampton, for **Songstress of Pitsford,** born Jan. 26; *s.* Sir Sam 33131, *d.* Songstress (Vol. 51, p. 359) *by* Eaton Royalist 31446.
1297 **R. N.**—George H. Drummond, for **Pansy of Pitsford.**
H. C.—1292, 1296. **C.**—1289, 1293.

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[1] Prizes given by the Hereford Herd Book Society.

[2] Champion Prize of £10 10*s.* given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 124–126.

Devons.

Class 127.—*Devon Bulls, born in or before* 1920.

1308 **I. (£15, & Champion.[1])**—ELAND CLATWORTHY, Cutsey Trull, Taunton, for **Overton Gold Coin** 9410, born July 13, 1916, bred by J. L. Huxtable, Overton, Bishop's Tawton, Barnstaple; *s.* Overton Gold Ring 8613, *d.* Overton Myrtle 2nd 25912 *by* Stockleigh Masterpiece 6548.

1313 **II. (£10, & R. N. for Champion.[1])**—A. M. WILLIAMS, Werrington Park, Launceston, for **Roadwater Goldfinder** 10789, born Nov. 29, 1918, bred by A. J. Hill, Roadwater Farm, Washford, Somerset; *s.* Lovellys Duke 6th 8955, *d.* Goldencup 79th 28411 *by* Lovellys Duke 5th 8573.

1310 **III. (£5.)**—CHARLES MORRIS, Highfield, St. Albans and Bishop's Lydeard, for **Highfield Blue Blood** 11049, born March 7, 1920; *s.* Highfield Gem 2nd 9329, *d.* Mangold 9th 25505 *by* Compton Douglas 5733.

1311 **R. N.**—CHARLES MORRIS, for **Highfield Remainder 3rd.**

H. C.—1309. **C.**—1312.

Class 128.—*Devon Bulls, born in* 1921.

1314 **I. (£15.)**—H.R.H. THE PRINCE OF WALES, K.G., Stoke Climsland, Cornwall, for **Coombeshead Grand Knight** 11399, born May 6; *s.* Highfield Gem 8919, *d.* Clampit Gladstone 3rd 29768 *by* Ford Plumper 7381.

1316 **II. (£10.)**—ELAND CLATWORTHY, Cutsey Trull, Taunton, for **Cutsey Monarch** 11436, born March 20; *s.* Overton Gold Coin 9410, *d.* Marigold 4th 30332 *by* Gotton Prince 5th 8888.

1320 **III. (£5.)**—MAJOR O. L. TRECHMANN, Westaway, Barnstaple, for **Westaway Jacob** 11704; *s.* Pickwell Jacob 3rd 10250, *d.* Overton Curly Coat 3rd *by* Stockleigh Masterpiece 6548.

1315 **R. N.**—BANKES SETTLED ESTATES, Kingston Lacy, Wimborne, for **Kingston Lacy Newton.**

H. C.—1317.

Class 129.—*Devon Cows or Heifers, in-milk, born in or before* 1919.

1324 **I. (£15, & Champion.[2])**—CHARLES MORRIS, Highfield, St. Albans, and Bishop's Lydeard, for **Highfield Fairmaid 2nd** 29395, born Feb. 24, 1916, calved Mar. 25, 1922; *s.* Holcombe Reminder 7413, *d.* Fairmaid 25464 *by* Cronje 5470.

1326 **II. (£10, & Special, £10 10s.[3])**—MAJOR O. L. TRECHMANN, Westaway, Barnstaple, for **Clampit Gay Lass 11th** 30724, born July 3, 1917, calved Oct. 25, 1921, bred by William Brent, Clampit, Callington, Cornwall; *s.* Highfield Gem 8919, *d.* Clampit Gay Lass 4th 24060 *by* Lovely's Duke 6145.

1323 **III. (£5.)**—CHARLES MORRIS, for **Highfield Comely** 27754, born Feb. 12, 1914, calved Jan. 30, 1922; *s.* Holcombe Reminder 7413, *d.* Cothelstone Comely 23501 *by* Rufus 5370.

1327 **R. N.**—F. J. YENDELL, Upcott, North Molton, for **Upcott Daisy 14th.**

H. C.—1321.

Class 130.—*Devon Dairy Cows or Heifers, in-milk, born in or before* 1919.[4]

1333 **I. (£15.)**—JOHN H. CHICK, Wynford Eagle, Dorchester, for **Wynford Pill** C 292, born July 23, 1913, calved May 14, 1922; *s.* Compton Moses 7015, *d.* Wynford Pink B 353 *by* Compton Rattler 6309.

1330 **II. (£10.)**—W. G. BUSK, Wraxall Manor, Dorchester, for **Wraxall Bluebell** A 543, born in 1915, calved April 13, 1922, bred by H. Gordge, Chilfrome, Dorset.

1332 **III. (£5.)**—JOHN H. CHICK, for **Wynford Broad** C 694, born March 15, 1918, calved May 3, 1922; *s.* Compton Director 9211, *d.* Wynford Bright *by* Compton Loadstar 7986.

1328 **R. N.**—W. G. BUSK, for **Suffragette 1st.**

Class 131.—*Devon Heifers, born in* 1920.

1338 **I. (£15, & R. N. for Champion.[2])**—CHARLES MORRIS, Highfield, St. Albans and Bishop's Lydeard, for **Highfield Fable 7th** 33141, born Feb. 23; *s.* Highfield Gem 2nd 9329, *d.* Highfield Fable 2nd 29394 *by* Highfield General 8105.

1339 **II. (£10.)**—CHARLES MORRIS, for **Highfield Lottie 3rd** 33158, born Feb. 18; *s.* Highfield Gauge 9689, *d.* Highfield Lottie 27767 *by* Longforth Mailbag 7439.

1335 **III. (£5.)**—HIS MAJESTY THE KING, The Royal Farms, Windsor, for **Windsor Flirt** 32498, born June 23; *s.* Windsor Captain 8325, *d.* Cothelstone Fallacy 24294 *by* Macaroon 5856.

1340 **R. N. (& Special, £5 5s.[3])**—FRANK SHEARMAN, Stoodleigh Court, Tiverton, for **Pickwell Curly Coat.**

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[1] Champion Prize of £10 10*s.* given by the Devon Cattle Breeders' Society for the best Bull in Classes 127 and 128, entered or eligible for entry in the Devon Herd Book.

[2] Champion Prize of £10 10*s.* given by the Devon Cattle Breeders' Society for the best Cow or Heifer in Classes 129–132, entered or eligible for entry in the Devon Herd Book.

[3] Special Prizes of £10 10*s.* First and £5 5*s.* Second given through the Devon Cattle Breeders' Society for the best Cows or Heifers in Classes 129–132, the property of Exhibitors who have not shown at any of the last seven shows of the R.A.S.E.

[4] Prizes given by the Devon Cattle Breeders' Society.

Class 132.—*Devon Heifers, born in* 1921.

1341 **I. (£15.)**—H.R.H. The Prince of Wales, K.G., Stoke Climsland, Cornwall, for **Coombeshead Cowslip** 33576, born Jan. 16 ; *s.* Clampit Gay Laddie 9197, *d.* Coombeshead Daisy 1st 28033 *by* Lord Daws 12th 7180.

1346 **II. (£10.)**—Alfred Pope, Henstill, Sandford, Crediton, for **Sandford Curly's Belle** 34300, born Jan. 10 ; *s.* Burlescombe Ruby King 10459, *d.* Sandford Curly 8th 31327 *by* Barum Duke 8355.

1344 **III. (£5.)**—Eland Clatworthy, .Cutsey Trull, Taunton, for **Cutsey Betsy** 33318, born March 12 ; *s.* Overton Favourite 9797, *d.* Young Betsy *by* Holcombe Major 7412.

1351 **R. N.**—Major O. L. Trechmann, Westaway, Barnstaple, for **Clampit Gay Lass.**

South Devons.

Class 133.—*South Devon Bulls, born in or before* 1920.

1353 **I. (£15, & Champion.[1])**—Ben Luscombe, Bowden, Yealmpton, Plymouth, for **Bowden Strawberry Boy** 6988A, born Jan. 1, 1917 ; *s.* Coarswell Yellow Boy 4014, *d.* Strawberry 2nd 11741 *by* Leigham Sort 3198.

1357 **II. (£10.)**—J. Stanley Wroth, Coombe, Aveton Gifford, Devon, for **Lavender's Boy 2nd** 6001, born Sept. 23, 1915, bred by Joshua Wakeham, Ley, North Huish, South Brent ; *s.* Coleridge King 3700, *d.* Lavender 6843 *by* Hard Luck 1890.

1352 **III. (£5.)**—George Banbury, Stantor Barton, Marldon, Paignton, Devon, for **Granby** 8499, born Jan. 7, 1919, bred by Philip Luce, Court Barton, Lamerton, Tavistock ; *s.* Nero 7250, *d.* Primrose 2nd 15459 *by* Court Good Sort 4833.

1356 **R. N.**—George Wills, Rocombe Barton, Teignmouth, for **Furzedown Lad 4th.**

Class 134.—*South Devon Bulls, born in* 1921.

1359 **I. (£15.)**—James C. P. Harvey, Pamflete, Holbeton, Plymouth, for **Pamflete Silverlight,** born March 1 ; *s.* Coleridge Napoleon 4th 7644, *d.* Downham 3rd 18202 *by* Caulston Rival 5845.

1363 **II. (£10.)**—John Luscombe, Manor Farm, North Huish, South Brent, Devon, for **Manor Laddie,** born March 20 ; *s.* Mothecombe Laddie 7935, *d.* Bouquet 6th 14133 *by* Langston King 4434.

1364 **III. (£5.)**—Lieut.-Col. the Rt. Hon. F. B. Mildmay, M.P., Flete, Ivybridge, for **Flete President,** born April 4 ; *s.* Worswell President 6910, *d.* Lilian's Favourite 20112 *by* Warrior 6299.

1358 **R. N.**—John Coaker & Son, Wear, Bishopsteignton, Teignmouth, for **Lavender's Boy 3rd.**

Class 135.—*South Devon Cows or Heifers, in-milk, born in or before* 1919.

1365 **I. (£15, & R. N. for Champion.[1])**—R. W. Chaffe, Worswell Barton, Revelstoke, Devon, for **Worswell Profit** 16478, born July 24, 1916, calved Feb. 10, 1922 ; *s.* Pamflete Dairyman 4509, *d.* Worswell Primrose Girl 11383 *by* Peter the Piper 3842.

1370 **II. (£10.)**—Lt.-Col. the Rt. Hon. F. B. Mildmay, M.P., Flete, Ivybridge, for **Highlands Wallflower** 21803, born June 18, 1919, calved Jan. 20, 1922, bred by Mrs. J. Bayly, Highlands, Ivybridge ; *s.* Lilian's Champion 6016, *d.* Bringgood 17057 *by* Wonwell Hero 5224

1369 **III. (£5)**—Ben Luscombe, Bowden, Yealmpton, Plymouth, for **Bowden Maggie 3rd** 18395, born May 20, 1917. calved March 15, 1922 ; *s.* Bowden's Cherry King 2nd 5306, *d.* Maggie 11033 *by* Leigham Sort 3198.

1371 **R. N.**—Robert Shinner, Stretchford, Buckfastleigh, Devon, for **Alice.**

H. C.—1373, 1374, 1375.

Class 136.—*South Devon Heifers, born in* 1920.[2]

1380 **I. (£15)**—J. Stanley Wroth, Coombe, Aveton Gifford, Devon, for **Snowdrop 5th** 24355, born March 20 ; *s.* Napoleon 12th 6658, *d.* Snowdrop 4th 16323 *by* Silver Royal 2771.

1377 **II. (£10.)**—James C. P. Harvey, Pamflete, Holbeton, Plymouth, for **Acorns 2nd** 23133, born April 25 ; *s.* Coleridge Napoleon 4th 7644, *d.* Pamflete Acorns 19807 *by* Pamflete N.B. 6092.

1378 **III (£5.)**—Lt.-Col. the Rt. Hon. F. B. Mildmay, M. P., Flete, Ivybridge, for **Flete Pink** 23515, born Jan. 28 ; *s.* Random 7315, *d.* Pink 15592 *by* Beckham Beauty 4280.

1376 **R. N.**—George Banbury, Stantor Barton, Marldon, Paignton, for **Stantor Crescent.**

H. C.—1379.

Class 137.—*South Devon Heifers, born in* 1921.

1384 **I. (£15.)**—Sir Cyril Kendall-Butler, K.B.E., Bourton House, Shrivenham, for **Bourton Eleanor** 24547, born Jan. 18 ; *s.* Battisborough Baronet 6364, *d.* Daisy 16271 *by* Pamflete Perfection 2nd 4514.

1386 **II. (£10.)**—Lt.-Col. the Rt. Hon. F. B. Mildmay, M.P., Flete, Ivybridge, for **Flete Countess 2nd,** born Feb. 21 ; *s.* General 7757, *d.* Countess 2nd 18522 *by* Lilian's Champion 6016.

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[1] Silver Challenge Cup, value £20, given through the South Devon Herd Book Society for the best animal in Classes 133–137.

[2] Prizes given by the South Devon Herd Book Society.

1385 **III.** (£5.)—John Luscombe, Manor Farm, North Huish, South Brent, for **Manor Buttercup**, born March 24; *s.* Mothecombe Laddie 7935, *d.* Buttercup 6th 20011 *by* Brownstone Laddie 4774.

1388 **R. N.**—J. Stanley Wroth, Coombe, Aveton Gifford for **Star 15th.**

Longhorns.

Class 138.—*Longhorn Bulls, born in or before* 1921.

1390 **I.** (£15.)—Sir Francis Newdegate, K.C.M.G., Arbury, Nuneaton, for **Arbury Alexander** 1149, dark brindle and white, born Feb 12, 1921; *s.* Arbury Lieutenant 2nd 722, *d.* Arbury Abronia.

1395 **II.** (£10.)—Bertram Worrall, Steeple Aston, Oxon, for **Luke** 818, red, brindle and white, born April 29, 1918, bred by F. J. Mayo, Friar Waddon, Dorchester; *s.* Lord Victor of Kent 680, *d.* Letty *by* Narleys Courtier 508.

1391 **III.** (£5.)—Henry B. Parsons, The Manor House, Eastwell Park, Ashford, Kent, for **Prince Diadem of Kent** 778, red brindle and white, born Feb. 23, 1918; *s.* Eastwell Examiner 734, *d.* Princess Dido *by* Eastwell Eagle 500.

1393 **R. N**—W. E. Swinnerton, Manor House, Over Whitacre, Birmingham, for **Stivichall Cure 2nd.**

H. C.—1394.

Class 139.—*Longhorn Cows or Heifers, in-milk, born in or before* 1919.

1398 **I.** (£15.)—W. Hanson Sale Arden Hill, Atherstone, for **Arden Cinderella,** red and white, born June 17, 1916, calved June 5, 1922; *s.* Arden Kingmaker 645, *d.* Arden Lady Panza *by* Putley Gay Lad 546.

1400 **II.** (£10.)—W. E. Swinnerton, Manor House, Over Whitacre, Birmingham, for **Stivichall Doreen 3rd,** brindle and white, born May 2, 1917, calved May 23, 1922; *s.* April Fool 634, *d.* Stivichall Doreen 2nd *by* Eastwell Exact 733.

1397 **III.** (£5.)—J. L. and A. Riley, Putley, Ledbury, for **Putley Cassandra,** red, brindle and white, born June 20, 1914, calved Nov. 14, 1921; *s.* Putley Peer 607, *d.* Putley Carnation *by* Putley Duke 511.

1399 **R. N.**—W. Hanson Sale, for **Arbury Collinsia.**

C.—1396.

Class 140.—*Longhorn Heifers, born in* 1920 *or* 1921.[1]

1402 **I.** (£15)—Henry B. Parsons, The Manor House, Eastwell Park, Ashford, Kent, for **Princess Waterloo of Kent,** grizzle and white, born Mar. 20, 1920; *s.* Duke of Kent 771, *d.* Pride of Kent *by* Laveno 4th 672.

1407 **II.** (£10.)—Bertram Worrall, Steeple Aston, Oxon, for **Royalty of Rousham,** red, brindle and white, born Feb. 2, 1921, bred by Captain C. W. Cottrell Dormer, Rousham, Oxon; *s.* Rousham Rambler 743, *d.* Dainty *by* Lord Hewish 595.

1403 **III.** (£5.)—J. L. and A. Riley, Putley, Ledbury, for **Putley Derry,** brindle and white, born May 22, 1921; *s.* Arden Dreadnought 763, *d.* Derry *by* Lord Victor of Kent 680.

1406 **R. N.**—Alfred Wheeler, Chippinghurst, Cuddesdon, Oxford, for **Linnet of Chippinghurst.**

H. C.—1401.

Sussex.

Class 141.—*Sussex Bulls, born in or before* 1920.

1413 **I.** (£15, & **Champion.**[2])—Campbell Newington, Oakover, Ticehurst, Sussex, for **Oakover Lad 9th** 5339, born March 21, 1920; *s.* Mabledon Lad 4326, *d.* Favourite 21st 13061 *by* Orchardmains Squire 2475.

1408 **II.** (£10, & **R. N.** for **Champion.**[2])—G. R. Bennett, Old House Farm, West Hoathly, Sussex, for **Sundridge** 4573, born Jan. 7, 1918, bred by John Aungier, Lynwick, Rudgwick; *s.* Lynwick Red Rover 3811, *d.* Lynwick Daisy 16th 16066 *by* Dogwood 3227.

1412 **III.** (£5.)—Lord Leconfield, Petworth House, Petworth, for **Petworth Albert 1st** 5303, born June 3, 1920; *s.* Petworth Albert 4713, *d.* Apsley Carex 7th 14196 *by* Shillinglee Bewbush 6th 2400.

1409 **R. N.**—H. Warren Coleman, Shermanbury Park, Henfield, for **Thurston Red Rover.**

Class 142.—*Sussex Bulls, born in* 1921.

1417 **I.** (£15.)—Captain E. H. T. Broadwood, M.C., Lyne, Capel, Dorking, for **Lyne Nobility** 5423, born March 21; *s.* Bolebroke Persuasive Minstrel 4724, *d.* Bella Napier 3rd 16718 *by* Lynwick Autocrat 2nd 3230.

1424 **II.** (£10.)—Campbell Newington, Oakover, Ticehurst, Sussex, for **Oakover Chevalier 6th** A 16, 5610, born March 5; *s.* Chevalier 2nd 3673, *d.* Favourite 21st 13061 *by* Orchardmains Squire 2475.

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[1] Prizes given by the Longhorn Cattle Society.

[2] Champion Silver Medal given by the Sussex Herd Book Society for the best Bull in Classes 141 and 142.

1415 **III. (£5.)**—G. R. Bennett, Old House Farm, West Hoathly, Sussex, for **Bolebroke Nobleman** 5598, born Jan. 6, bred by Captain P. R. Mann, Bolebroke, Hartfield, Sussex; *s.* Ticehurst Nobleman 2nd 4634, *d.* Bolebroke Prolific Mary 18204 *by* Burgate James 3660.

1423 **R. N.**—Major G. H. Loder, High Beeches, Handcross, Haywards Heath, for **Dillions Red Rover 3rd** A 6, 5592.

C.—1416, 1425, 1426.

Class 143.—*Sussex Cows or Heifers, in-milk, born in or before* 1919.

1434 **I. (£15, & R. N. for Champion.[1])**—Campbell Newington, Oakover, Ticehurst, Sussex, for **Oakover Twin 8th** 17036, born Jan. 6, 1916, calved March 12, 1922; *s.* Oakover Gold 2nd 2970, *d.* Oakover Twin 6th 15171 *by* Hilda's Briar 2650.

1430 **II. (£10.)**—Sir John Esplen, Bt., Hardres Court, Canterbury, for **Lynwick Lady** 16072, born March 25, 1915, calved May 25, 1922, bred by John Aungier, Lynwick, Rudgwick; *s.* Lynwick Prebble 3rd 3018, *d.* Lady Gondolier Prebble 11457 *by* Prebble Confidence 3rd 2148.

1432 **III. (£5.)**—The Earl of Guilford, Waldershare Park, Dover, for **Lynwick Circus Girl 4th** 16065, born Jan. 17, 1915, calved April 21, 1922, bred by John Aungier, Lynwick, Rudgwick; *s.* Dogwood 3227, *d.* Circus Girl 2nd 12756 *by* Masterpiece 2330.

1428 **R. N.**—Captain E. H. T. Broadwood, M.C., Lyne, Capel, Dorking, for **Lyne Marigold 10th.**

H. C.—1433.

Class 144.—*Sussex Heifers, born in* 1920.[2]

1439 **I. (£15, & Champion.[1])**—Ellice Ezra, Lock, Partridge Green, for **Drungewick Daisy 16th** 19107, born Feb. 26, bred by E. E. Braby, Drungewick Manor, Rudgwick; *s.* Drungewick Aone 7th 4582, *d.* Drungewick Daisy 14th 16712 *by* Drungewick Marksman 3rd 3274.

1440 **II. (£10.)**—Major H. C. Jeddere-Fisher, Apsleytown, East Grinstead, for **Oakover Comely 6th** 19551, born Feb. 10, bred by Campbell Newington, Oakover, Ticehurst, Sussex; *s.* Mabledon Lad 4326, *d.* Oakover Cowslip 17026 *by* Ironside 3411.

1438 **III. (£5.)**—Sir John Esplen, Bt., Hardres Court, Canterbury, for **Avisford Beauty** 19236, born Jan. 6, bred by E. C. Fairweather, Avisford Park, Arundel; *s.* St. Albans 43rd 4405, *d.* Lock Beauty 2nd 15983 *by* Prince of Lock 2nd 2499.

1436 **R. N.**—H. Warren Coleman, Shermanbury Park, Henfield, for **Mona of Ewhurst.**

Class 145.—*Sussex Heifers, born in* 1921.

1441 **I. (£15.)**—G. R. Bennett, Old House Farm, West Hoathly, Sussex, for **Ridge Gentle** 19707, born March 7; *s.* Sundridge 4573, *d.* Northchapel Rose 14064 *by* Reformer 2519.

1452 **II. (£10.)**—Campbell Newington, Oakover, Ticehurst, Sussex, for **Oakover Comely 15th** 20195, A 15, born Feb. 26; *s.* Mabledon Lad 4326, *d.* Oakover Cherry 15158 *by* Hilda's Briar 2650.

1444 **III. (£5.)**—Sir John Esplen, Bt., Hardres Court, Canterbury, for **Holborough Cherry 1st** 20268, born Feb. 11, bred by O. E. D'Avigdor Goldsmid, Somerhill, Tonbridge; *s.* Lock Rufus 3095, *d.* Lynwick Rock Cherry 5th 16682 *by* Drungewick K.C. 3rd 2662.

1451 **R. N.**—P. R. Mann, Bolebroke, Hartfield, Sussex, for **Bolebroke Columbine 3rd.**

H. C.—1450. **C.**—1442, 1449.

Welsh.

Class 146.—*Welsh Bulls, born on or before November* 30, 1920.

1459 **I. (£15.)**—Sir Edward Naylor-Leyland, Nantclwyd Hall, Ruthin, for **Bodelwa Botha** 1267, born May 9, 1919, bred by O. E. Hughes, Bodelwa, Tycroes, Anglesey; *s.* Cwyfan Botha 1019, *d.* Bodelwa Sally 2676 *by* Madryn King 493.

1457 **II. (£10.)**—R. M. Greaves, Wern, Portmadoc, for **Wern Sentry** 1542, born Sept. 20, 1919; *s.* Snowdon Ideal 1192, *d.* Wern Ideal 1280 *by* Duke of Wellington 294.

1458 **III. (£5.)**—J. W. Holland, Cim Farm, Abersoch, Carnarvonshire, for **Cim Surprise,** born Dec. 27, 1918; *s.* Glynllifon Captain 996, *d.* Pencae Beauty 4th 3097 *by* Rhydgarnedd Maldywn 890.

Class 147.—*Welsh Bulls, born on or between December* 1, 1920, *and November* 30 1921[3]

1464 **I. (£15)**—Lord Penrhyn, Penrhyn Castle, Bangor, or **Harold of Penrhyn,** born Feb. 2, 1921; *s.* Musketeer of Penrhyn 1140, *d.* Hester 3rd of Penrhyn 2311 *by* Madryn Cawe 488.

1462 **II. (£10.)**—R. M. Greaves, Wern, Portmadoc, for **Blaen Boxer,** born Dec. 26, 1920, bred by D. L. Thomas, Blaensarngoch, Llanboidy, Whitland; *s.* Blaen President 1265, *d.* Favourite 1910 *by* Michael 222.

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[1] Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 143–145.

[2] Prizes given by the Sussex Herd Book Society.

[3] Prizes given by the Welsh Black Cattle Society.

1463 **III. (£5.)**—J. W. Holland, Cim Farm, Abersoch, for **Punt-y-Gwair Commandant,** born July 16, 1921 ; *s.* Bodelwa Glyndwr 1018, *d.* Voelas Quiver 3901 *by* Escuan Gwilym 981.

Class 148.—*Welsh Cows or Heifers, in-milk, born on or before November* 30, 1919.

1470 **I. (£15.)**—Lord Penrhyn, Penrhyn Castle, Bangor, for **Hester 3rd of Penrhyn** 2311, born June 11, 1914, calved March 9, 1922 ; *s.* Madryn Cawe 488, *d.* Voelas Hester 1242 *by* Eifionydd 417.
1466 **II. (£10.)**—The Hon. Mrs. L. A. Brodrick, Coed Côch, Abergele, for **Penmynydd Nan** 2286, born March 10, 1912, calved Jan. 24, 1922, bred by William Owen, Penmynydd, Anglesea ; *s.* Penmynydd Caradog 378, *d.* Penmynydd Dlos 1090 *by* Penmynydd Arthur 112.
1469 **III. (£5.)**—Shirley H. Jenks, Pilsdon, Dorset, for **Rorsedd Dwsi 3rd** 2537, born Oct. 7, 1916, calved Dec. 16, 1921, bred by D. H. Davies, Rorsedd Fawr, Chwilog ; *s.* Madoc Dick 784, *d.* Rorsedd Dwsi 2nd 1997 *by* Psnene Cawe 440.
1468 **R. N.**—Lt.-Col. David Davies, M.P., Broneirion, Llandinam, for **Glasfryn Linda.**

Class 149.—*Welsh Heifers, born on or between December* 1, 1919, *and November* 30, 1920.

1473 **I. (£15.)**—J. W. Holland, Cim Farm, Abersoch, for **Punt-y-Gwair Daffodil** 4128, born June 5, 1920 ; *s.* Bachellyn Turk 1255, *d.* Punt-y-Gwair Patsey 4125 *by* Falkland King 1026.
1475 **II. (£10.)**—Lord Penrhyn, Penrhyn Castle, Bangor, for **Gwen 9th of Penrhyn,** born Dec. 2, 1919 ; *s.* Musketeer of Penrhyn 1140, *d.* Gwen 4th of Penrhyn 2912 *by* Standard of Penrhyn 624.
1472 **III. (£5.)**—R. M. Greaves, Wern, Portmadoc, for **Wern Tulip** 4042, born Sept. 10, 1920 ; *s.* Snowdon Idwal 1192, *d.* Wern Posy 2596 *by* Wern Nonsuch 715.
1477 **R. N.**—Capt. J. C. Wynne-Finch, Voelas Hall, Bettws-y-Coed, for **Voelas Tulip.**
H. C.—1471.

Class 150.—*Welsh Heifers, born on or between December* 1, 1920, *and November* 30, 1921.

1484 **I. (£15.)**—Capt. J. C. Wynne-Finch, Voelas Hall, Bettws-y-coed, Carnarvonshire, for **Voelas Uwchaled,** born Feb. 16, 1921 ; *s.* Admiral 1144, *d.* Voelas Myfanwy 1636 *by* Billy Bach 3rd 469.
1483 **II. (£10.)**—Capt. J. C. Wynne-Finch, for **Voelas Ursula,** born March 20, 1921 ; *s.* Voelas Stamp 1522, *d.* Voelas Queen 3169 *by* Bachellyn Oxford 818.
1480 **III. (£5.)**—J. W. Holland, Cim Farm, Abersoch, for **Cim Topsey,** born March 18, 1921 ; *s.* Carmil Jim 1303, *d.* Pencae Beauty 4th 3097 *by* Rhydgarnedd Maldwyn 890.
1479 **R. N.**—R. M. Greaves, Wern, Portmadoc, for **Wern Angel.**
H. C.—1478.

Red Polls.

Class 151.—*Red Poll Bulls, born in or before* 1919.

1490 **I. (£15, & Champion.[1])**—J. G. Dugdale, The Abbey, Cirencester, for **Necton Gloucester** 11423, born Feb. 13, 1918, bred by R. Harvey Mason, Necton Hall, Swaffham ; *s.* Shrewsbury 10489, *d.* Godiva 22573 *by* Turk 10115.
1489 **II. (£10.)**—Thomas Brown & Son, Marham Hall, King's Lynn, for **Marham Dauntless** 11031, born Jan. 23, 1916 ; *s.* Gay Davyson 10565, *d.* Davy 308th 20697 *by* Majiolini 3600.
1493 **III. (£5.)**—Eric C. Lindsay, Landwade Hall, Exning, Suffolk, for **Marham Florin** 11732, born Jan. 17, 1919, bred by T. Brown & Son, Marham Hall, King's Lynn ; *s.* Marham Dauntless 11031, *d.* Flutter 18046 *by* Wentworth 5257.
1491 **R. N.**—Henry Huxley, Great Enton, Witley, Surrey, for **Boughton David.**
H. C.—1494. **C.**—1486.

Class 152.—*Red Poll Bulls, born in* 1920.[2]

1503 **I. (£15, & R. N. for Champion.[1])**—Mrs. G. C. Nevile, Horsted Hall, Norwich, for **Horstead Artaxerxes** 11693, born Jan. 11 ; *s.* Sudbourne Croesus 10927, *d.* Necton Dido 26400 *by* Shrewsbury 10489.
1504 **II. (£10.)**—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Ashmoor Viscount,** born March 14 ; *s.* Ashmoor Pearson 11525. *d.* Ashmoor Violet 21981 *by* Bad Mark 9905.
1499 **III. (£5.)**—Thomas Brown & Son, Marham Hall, King's Lynn, for **Marham Plantagenet** 12069, born Jan. 27 ; *s.* Marham Panther 11412, *d.* Handsome Plantain P 1 24577 *by* Ashlyns Count 10125.
1501 **R. N.**—Major J. S. Courtauld, M.C., Burton Park, Petworth, for **Burton Bovis.**

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[1] **Champion Prize of £5 given by the Red Poll Cattle Society for the best Bull in Classes 151–153.**

[2] **Prizes given by the Red Poll Cattle Society.**

Class 153.—*Red Poll Bulls, born in* 1921.

1515 I. (£15.)—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Easton Liberator,** born Jan. 18, bred by the Marchioness of Graham, Easton Park, Suffolk; *s.* Sudbourne Albion 11064, *d.* Easton Liberty 25577 *by* Lysander 10610.

1514 II. (£10.)—A. Carlyle Smith, for **Ashmoor Jester,** born Mar. 7; *s.* Ashmoor Pearson 11525, *d.* Ashmoor Joan 23386 *by* Dax 9567.

1506 III. (£5.)—His Majesty the King, Sandringham, for **Royal Brigadier,** born March 13; *s.* Boulge Brigadier 11098, *d.* Royal Mayflower 26454 *by* Letton Majiolini 8th 10756.

1513 R. N.—Capt. J. O. Sherrard, Gaddesby Hall, Leicestershire, for **Gaddesby Diamond.**
H. C.—1512. C.—1509.

Class 154.—*Red Poll Cows, in-milk, born in or before* 1918.

1530 I. (£15, & Champion.[1])—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Red Lip** 25841, born Dec. 30, 1915, calved April 25, 1922, bred by H. P. Blofield, Billingford Hall, Scole; *s.* Langsyne 10752, *d.* Rendlesham Royal Gift 23693 *by* Davyson 265th 9230.

1521 II. (£10.)—Lt.-Col. Sir Merrik R. Burrell, Bt., C.B.E., Knepp Castle, Horsham, for **Miss Sybil 13th** 24159, born Sept. 30, 1911, calved May 4, 1922, bred by W. L. N. Champion, Riddlesworth Hall, Norfolk; *s.* Rocketter 10085, *d.* Miss Sybil 9th 21753 *by* Spot Red 9644.

1526 III. (£5.)—Viscount Folkestone, Longford Castle, Salisbury, for **Longford Ruby** 25233, born Aug. 19, 1915, calved May 28, 1922, bred by the Earl of Radnor, Longford Castle, Salisbury; *s.* Longford King 10762, *d.* Longford Diamond 22172 *by* Demon 9789.

1523 R. N.—Lt.-Col. Sir Merrik R. Burrell, Bt., C.B.E., for **Sudbourne Minerva.**
H. C.—1520, 1528. C.—1518.

Class 156.—*Red Poll Heifers, born in* 1920.[2]

1538 I. (£15, & R. N. for Champion.[1])—His Majesty the King, Sandringham, for **Royal Polly** 29204, born Feb. 3; *s.* Royal Farmer 11447, *d.* Sudbourne Polly 26543 *by* Hermit's Ruby 10873.

1547 II. (£10.)—Viscount Folkestone, Longford Castle, Salisbury, for **Dallinghoo Blossom 3rd** 28654, born Jan. 7, bred by Edward C. Ash, Dallinghoo Hall, Suffolk; *s.* Gressenhall Tauras 10722, *d.* Dallinghoo Blossom 2nd 25552 *by* Letton Majiolini 6th 10318.

1551 III. (£5.)—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Mignonette** 29370, born Feb. 22, bred by the late Lord Manton; *s.* Sudbourne Alfa 11216, *d.* Rendlesham Minnow 24237 *by* Rendlesham Davyson 10220.

1554 R. N.—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Ashmoor Flotsam.**
H. C.—1543. C.—1548.

Class 157.—*Red Poll Heifers, born in* 1921.

1571 I. (£15.)—Felix W. Leach, Meddler Stud, Kennett, Newmarket, for **Meddler Primrose,** born Feb. 27; *s.* Meddler Armistice 11416, *d.* Meddler Glint 25756 *by* Sudbourne King Crow 10681.

1555 II. (£10.)—His Majesty the King, Sandringham, for **Royal Mavis,** born Jan. 26; *s.* Royal Sunshine 11452, *d.* Lady Merle 25745 *by* Honingham Alcester 10424.

1576 III. (£5.)—A. Carlyle Smith, Sutton Hall, Woodbridge, for **Dallinghoo Fairy 4th,** born Jan. 5, bred by E. C. Ash, Dallinghoo Hall, Wickham Market; *s.* Gressenhall Taurus 10722, *d.* Dallinghoo Fairy 1st 26124 *by* Framlingham Royal Davyson 10564.

1572 R. N.—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, for **Sudbourne Esmé.**

Aberdeen-Angus.

Class 158.—*Aberdeen-Angus Bulls, born on or before November* 30, 1919.

1579 I. (£15, & Champion.[3])—H. L. C. Brassey, M.P., Apethorpe Hall, Peterborough, for **Black Knight of Auchterarder** 45102, born April 29, 1919, bred by A. T. Reid, Auchterarder House, Auchterarder; *s.* Evmar 41558, *d.* Blackbird 5th of Braevall 55362 *by* Prince of Peru 32409.

1583 II. (£10, & R. N. for Champion.[3])—Charles T. Scott, Buckland Manor, Broadway, Worcs, for **Etrurian of Buckland** 45802, born Dec. 1, 1918; *s.* Etrurian of Bleaton 41498, *d.* Elasticity of Bywell 51787 *by* Vellum of Bywell 32650.

1584 III. (£5.)—Col. C. W. Sofer Whitburn, Addington Park, West Malling, Kent, for **Eaton of Harviestoun** 43247, born Jan. 26, 1918, bred by J. E. Kerr, Harviestoun, Dollar; *s.* Eden Edric of Dalmeny 39284, *d.* Erona of Harviestoun 49170 *by* Prince of the Wassail 23751.

1581 R. N.—J. J. Cridlan, Maisemore Park, Gloucester, for **Elfarcombe of Goodwood.**

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[1] Champion Prize of £5 given by the Red Poll Cattle Society for the best Cow or Heifer in Classes 154–157.

[2] Prizes given by the Red Poll Cattle Society.

[3] Champion Gold Medal given by the Aberdeen-Angus Cattle Society for the best animal in Classes 158–163.

Class 159.—*Aberdeen-Angus Bulls, born on or between December* 1, 1919, *and November* 30, 1920.[1]

1585 I. (£15.)—Adam P. Cross, Lamport Hall, Northampton, for **Jodrel of Achvochkie** 48486, born Dec. 26, 1919, bred by David Dean, Advie, Strathspey; *s.* Burma of Connage 42976, *d.* Ioseene 58056 *by* Prince Benison of Ballindalloch 36711.

1586 II. (£10.)—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, for **Baron Eros of Bleaton** 47225, born Jan. 12, 1920, bred by Marshall and Mitchell, Bleaton, Blairgowrie; *s.* Baron Beauford 35480, *d.* Rosemary Erica 49660 *by* Edward Carr 25496.

1587 III. (£5.)—Lady Sophie Scott, Westbury Manor, Brackley, for **Prince of Westbury** 49052, born April 22, 1920; *s.* Lord Allom of Claverdon 41902, *d.* Pride of Tweedale 46551 *by* Idelamere 22036.

Class 160.—*Aberdeen-Angus Bulls, born on or between December* 1, 1920, *and November* 30, 1921.

1592 I. (£15.)—H. L. C. Brassey, M.P., Apethorpe Hall, Peterborough, for **El Hakiman** 50176, born April 22, 1921; *s.* Black Knight of Auchterarder 45102, *d.* Eric 24th of Brawall 63592 *by* Proud Cæsar 38586.

1597 II. (£10.)—Lord Penrhyn, Wicken Park, Stony Stratford, for **Wicken Idiom** 51697, born Feb. 7, 1921; *s.* Juno of Ballindalloch 39879, *d.* Ideal Pride of Wicken 8th 60907 *by* Wicken Recluse 37110.

1598 III. (£5.)—Viscount Pirrie, K.P., Witley Park, Godalming, for **Mulben Peerless** 51074, born Jan. 28, 1921, bred by William G. Macpherson, Mulben Mains, Mulben; *s.* Easdale of Harviestoun 41175, *d.* Pride of Mulben 39th 52755 *by* Black Bouncer 31482.

1599 R. N.—Brig.-General J. G. Rotton, C.B., C.M.G., Stokesay Court, Craven Arms, for **Sedition.**

C.—1589, 1591, 1601.

Class 161.—*Aberdeen-Angus Cows or Heifers, in-milk, born on or before November* 30, 1919.

1611 I. (£15, & R. N. for Champion.[2])—Edward A. Wigan, Conholt Park, Andover, for **Lady Rose of Conholt** 61430, born Dec. 11, 1916, calved Jan. 20, 1922; *s.* Earl Ebon of Ballindalloch 35751, *d.* Tuberose of Standen 43477 *by* Elector of Benton 21814.

1604 II. (£10.)—A. W. Bailey Hawkins, Stagenhoe Bottom Farm, Welwyn, Herts, for **Ethenison of Advie** 58415, born Dec. 7, 1915, calved April 6, 1922, bred by Peter Grant, Advie Mains, Advie, Morayshire; *s.* Prince Benison of Ballindalloch 36711, *d.* Ethelreda 40621 *by* Plebeid 21827.

1610 III. (£5.)—Col. C. W. Sofer Whitburn, Addington Park, West Malling, Kent, for **Lady Ida of Dallas** 62610, born March 3, 1918, calved Dec. 23, 1921, bred by Captain Hamilton Houldsworth, Dallas; *s.* Prince of Perfection 40523, *d.* Ikoma 52695 *by* Elsyn 23100.

1606 R. N.—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, for **Kind Jelt of Tarsets.**

C.—1608, 1609.

Class 162.—*Aberdeen-Angus Heifers, born on or between December* 1, 1919, *and November* 30, 1920.

1612 I. (£15.)—H. L. C. Brassey, M.P., Apethorpe Hall, Peterborough, for **Pride of Georgia** 66274, born Dec. 28, 1919, bred by Viscount Allendale, Bywell, Stocksfield-on-Tyne; *s.* Proud George 38595, *d.* Pride of the Bow 50802 *by* Everard of Ballindalloch 21902.

1619 II. (£10.)—Augustus Thellusson, Brodsworth Hall, Doncaster, for **Lottie of Brodsworth** 68305, born Jan. 27, 1920; *s.* Elmstead of Bywell 35896, *d.* Charlotte of Brodsworth 61279 *by* Royal Prince of Garvault 35224.

1614 III. (£5.)—J. J. Cridlan, Maisemore Park, Gloucester, for **Estella 3rd of Maisemore** 66743, born Dec. 3, 1919; *s.* Idyll of Maisemore 36219, *d.* Estelle of Maisemore 50414 *by* Everwise 24436.

1613 R. N.—H. L. C. Brassey, M.P., for **Prudence of Auchterarder.**

H. C.—1617. C.—1618.

Class 163.—*Aberdeen-Angus Heifers, born on or between December* 1, 1920, *and November* 30, 1921.

1634 I. (£15, & Champion.[2])—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, for **Queen 3rd of Basildon,** born May 12, 1921; *s.* Idyll of Maisemore 36219, *d.* Queen Alexandra 55835 *by* Gardafire of Ballindalloch 31967.

1629 II. (£10.)—A. W. Bailey Hawkins, Stagenhoe Bottom Farm, Welwyn, Herts, for **Entice 2nd of Stagenhoe** 69700, born Jan. 14, 1921; *s.* Evidence of Ballindalloch 45884, *d.* Entice of Greystone 52369 *by* Earl Dongall 29039.

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[1] Prizes given by the Aberdeen-Angus Cattle Society.

[2] Champion Gold Medal given by the English Aberdeen-Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Champion Gold Medal of the Aberdeen-Angus Cattle Society in Classes 158–163.

1626 **III. (£5.)**—J. J. Cridlan, **Maisemore Park, Gloucester, for Pride 22nd of Maisemore 69158, born Feb. 7, 1921; *s.* George R. of Ballindalloch 80611, *d.* Pride 19th of Maisemore 64341** *by* Idyll of Maisemore 36219.

1635 **R. N.**—Viscount Pirrie, M.P., Witley Park, Godalming, for **Evera of Bothwellseat.**

H. C.—1625. **C.**—1622, 1627, 1642, 1644

Cup.[1]—H. L. C. Brassey, M.P., Apethorpe Hall, Peterborough.

Galloways.

Class 164.—*Galloway Bulls, born on or before November* 30, 1920.

1646 **I. (£15, & Champion.**[2]**)**—Lady Dorothy Henley, Askerton Castle, Brampton, Cumberland, for **Punch of Dalwyne** 13727, born Feb. 1, 1918, bred by John Blackley, Lockfield, Dumfries; *s.* Ideal of Thorniehill 12342, *d.* Jasmine 22794 *by* Matthew Mark 10726.

1645 **II. (£10.)**—Sir Robert W. Buchanan-Jardine, Bt., Castle Milk, Lockerbie, for **Tarbreoch Borderer 3rd** 13775, born Jan. 25, 1918 bred by J. Cunningham, Tarbreoch, Dalbeattie; *s.* Sapphire 12268, *d.* May Queen 2nd of Glasnick 18489 *by* Scottish Chief 2nd of Castlemilk 7683.

Class 165.—*Galloway Bulls, born on or between December* 1, 1920, *and November* 30, 1921.[3]

1648 **I. (£15.)**—Lady Dorothy Henley, Askerton Castle, Brampton, Cumberland, for **War Bond 2nd of Corriehalls** 14837, born March 16, 1921, bred by D. and J. Little, Corriehalls, Lockerbie; *s.* Kennedy of Killearn 14106, *d.* Nettie 3rd of Corriehalls 25993 *by* Matthew Mark 10726.

1647 **II. (£10.)**—Sir Robert W. Buchanan-Jardine, Bt., Castle Milk, Lockerbie, for **Clansman of Castlemilk** 14814, born June 3, 1921; *s.* Tarbreoch Borderer 3rd 13775, *d.* Claire 2nd of Castlemilk 23487 *by* Baron 10033.

Class 166.—*Galloway Cows or Heifers, in-milk, born on or before November* 30, 1919

1649 **I. (£15.)**—Sir Robert W. Buchanan-Jardine, Bt., Castle Milk, Lockerbie, for **Dorothy of Castlemilk** 24676, born Dec. 3, 1914, calved Jan. 10, 1922; *s.* Archer 5th of Castlemilk 11010, *d.* Dorothy 5th of Stepford 22155 *by* Cairn of Stepford 8888.

1651 **II. (£10.)**—Sir Robert W. Buchanan-Jardine, Bt., for **Eunice 4th of Castlemilk** 22958, born July 19, 1912, calved Jan. 12, 1922; *s.* Mascot 10830, *d.* Eunice of Castlemilk 16349 *by* Maharajah of Castlemilk 6813.

Class 167.—*Galloway Heifers, born on or between December* 1, 1919, *and November* 30, 1920.

1652 **I. (£15.)**—D. and J. Little, Corriehalls, Lockerbie, for **Tarbreoch Bella** 27478, born June 5, 1920, bred by J. Cunningham, Tarbreoch, Dalbeattie; *s.* Tarbreoch Star 13778, *d.* Tarbreoch Blue Bell 2nd 25782 *by* Sapphire 12268.

Class 168.—*Galloway Heifers, born on or between December* 1, 1920, *and November* 30, 1921.

1653 **I. (£15, & R. N. for Champion.**[2]**)**—Sir Robert W. Buchanan-Jardine, Bt., Castle Milk, Lockerbie, for **Lizzie of Castlemilk** 28127, born Dec. 23, 1920, bred by T. Hope Bell, Morrington, Dumfriesshire; *s.* Kenneth of Killearn 11370, *d.* Lizzie 17th of Chapelton 25160 *by* Cæsar 10697.

1655 **II. (£10.)**—Lady Dorothy Henley, Askerton Castle, Brampton, Cumberland, for **Joan of Askerton** 27954, born Jan. 19, 1921, bred by the late Rosalind Countess of Carlisle, Manor House, Boothby, Brampton; *s.* Merry Mark 2nd 13757, *d.* Joan 3rd of Scroggiehall 26695 *by* Nero of Dalwyne 13023.

1654 **III. (£5.)**—Lady Dorothy Henley, for **Bloom of Askerton** 27960, born April 4, 1921, bred by the late Rosalind Countess of Carlisle, Manor House, Boothby, Brampton; *s.* Punch of Dalwyne 13727, *d.* Favourite of Askerton 23277 *by* Novelist 10732.

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[1] Silver Challenge Cup, value £25, given through the English Aberdeen-Angus Cattle Association for the most points awarded in a combination of entries in Classes 158 to 163, on the basis of: Four points for a First Prize, three points for a Second Prize, two points for a Third Prize, one point for a Fourth Prize, two points for a Championship, and one point for a Reserve for a Championship.

[2] Champion Prize of £5 given by the Galloway Cattle Society for the best animal in Classes 164–168.

[3] Prizes given by the Galloway Cattle Society.

Ayrshires.

Class 169.—*Ayrshire Bulls, born in or before* 1921.

1658 I. (£15.)—Mrs. Houison Craufurd, Dunlop House, Dunlop, Ayrshire, for **Howie's Hot Stuff** 17895, born March 2, 1918, bred by Thomas Logan, Low Milton, Maybole; *s.* Howie's Blockade 15275, *d.* Carston Mary Ann 41328 *by* High Tarbeg Coronation 9377.

1661 II. (£10.)—Major Henry Keswick, Cowhill Tower, Dumfries, for **Drumsine Royal Guard** 18631, born Jan. 1, 1919, bred by H. Winter, Drougan, Ayrshire; *s.* Friendlesshead Victor 16572, *d.* Drumsine Nettie 58146 *by* Netherton Kosmos 12605.

1657 III. (£5.)—Thomas Barr, Hobsland, Monkton, Ayrshire, for **Relief Excellence** 20628, born Feb. 22, 1920, bred by James Mackie, Relief, Ecclefechan; *s.* Hobsland Victory 16489, *d.* Dalfibble Bent 46375 *by* Dalfibble Crusader 8761.

1656 R. N.—Alex. Y. Allan, Aitkenbar, Dumbarton, for **Aitkenbar Magnet.**

H. C.—1659.

Class 170a.—*Ayrshire Cows or Heifers, in-milk.*

1682 I. (£15.)—Jacob S. Murray, Dalgig, New Cumnock, for **Carston Cinderella 2nd** 36325, born in June, 1912, calved June 4, 1922, bred by the late John Murray, Carston, Ochiltree; *s.* Carston Merry King 8307, *d.* Carston Cinderella 26606 *by* Carston St. George 6100.

1680 II. (£10.)—A. and A. Kirkpatrick, Barr, Sanquhar, for **Barr Amelia** 59782, born April 2, 1916, calved May 10, 1922, bred by J. Lennox, Auchengee, New Cumnock; *s.* Cairn Diamond 9322, *d.* Auchengee Derby 4th 44327 *by* Castle Mains Thistledown 6342.

1672 III. (£5.)—William L. Ferguson, Catlinns, Lockerbie, for **Edingham Belinda** 30694, born Feb., 1915, calved June 18, 1922, bred by William Taylor, Edingham, Dalbeattie; *s.* Craighead Diamond 8765, *d.* Edingham Belle 5th 30694 *by* Edingham Clansman 8976.

1666 R. N.—Thomas Barr, Hobsland, Monkton, for **Hobsland Ella 3rd.**

H. C.—1665, 1676.

Class 170b.—*Ayrshire Cows or Heifers, in-calf.*[1]

1678 I. (£15.)—Major Henry Keswick, Cowhill Tower, Dumfries, for **Howie's White Bess,** born in Nov. 1916, bred by James Howie, Hillhouse, Kilmarnock; *s.* Holehouse Sunrise 11044, *d.* Cawhillan Bessie 3rd 39022 *by* Barboigh Fred 8644.

1681 II. (£10.)—A. and A. Kirkpatrick, Barr, Sanquhar, for **Torrs Banana** 59264, born in Feb., 1916, bred by W. Lindsay, Torrs, Castle Douglas; *s.* Netherhall Grandee 9794 *d.* Torrs Fannie 5th 40231 *by* Netherton King Ned 8844.

1671 III. (£5.)—William L. Ferguson, Catlinns, Lockerbie, for **Catlinns Princess Alice** 51043, born March 21, 1915; *s.* Brae Rising Star 8187, *d.* Ardgowan Princess Lizzie 22241 *by* Corra Black Prince 6072.

1664 R. N.—Alex. Y. Allan, Aitkenbar, Dumbarton, for **Aitkenbar Vera.**

H. C.—1670, 1685.

Park Cattle.

Class 171.—*Park Polled Bulls, born in or before* 1921.

1690 I. (£15.)—Brig.-General K. Kincaid-Smith, St. Osyths Priory, Colchester, for **Rex** 133, born Nov. 17, 1920, bred by John Cator, Woodbastwick Hall, Norwich; *s.* Woodbastwick Peter 67, *d.* Woodbastwick Blue Stocking 2nd 360.

1688 II. (£10.)—John Cator, Woodbastwick Hall, Norwich, for **Woodbastwick Petrarch** 139, born Nov. 5, 1919; *s.* Woodbastwick Peter 67, *d.* Woodbastwick Jollity 380 *by* Cumberland 1st.

1687 III. (£5.)—Buxton and Birkbeck, Horstead, Norwich, for **Bawdeswell Elk 3rd,** born April 19, 1920, bred by Major Q. E. Gurney, Bawdeswell Hall, East Dereham; *s.* Bawdeswell Somers 45, *d.* Bawdeswell Elf 184.

1689 R. N.—Major Q. E. Gurney, Bawdeswell Hall, East Dereham, for **Bawdeswell Alpha.**

Class 172.—*Park Polled Cows or Heifers, in milk, born in or before* 1919.[2]

1696 I. (£15.)—John Cator, Woodbastwick Hall, Norwich, for **Woodbastwick Junket 2nd** 378, born May 4, 1917, calved Dec. 6, 1921; *s.* Stokesby 2nd, *d.* Blanc Mange *by* Lancaster.

1699 II. (£10.)—Major Q. E. Gurney, Bawdeswell Hall, East Dereham, for **Northrepps Primula** 580, born July 7, 1919, calved June 1, 1922, bred by Richard Gurney, Northrepps Hall, Norwich; *s.* Northrepps Woodwick 55, *d.* Northrepps Primrose 274.

1700 III. (£5.)—Brig.-General K. Kincaid-Smith, St. Osyths Priory, Colchester, for **Jasper 3rd** 610, born April 11, 1919, calved Dec. 24, 1921, bred by John Cator, Woodbastwick Hall, Norwich; *s.* Woodbastwick Cumberland 2nd 63, *d.* Woodbastwick Jasper 370.

1694 R. N.—John Cator, Woodbastwick Hall, Norwich, for **Primitive 3rd.**

H. C.—1695, 1697, 1698.

[1] Prizes given by the Ayrshire Cattle Society.

[2] Prizes given by the Park Cattle Society.

Class 173.—*Park Horned Bulls, born in or before* 1921.

1702 **I. (£15.)**—LORD DYNEVOR, 15, Lower Berkeley Street, London, W., for **Solva Snowstorm** 79, born May 21, 1920, bred by Captain T. H. Howell, Trewellwell, Solva; *s.* Solva Snowball 27, *d.* Solva Snowdrop 106.

1701 **II. (£10.)**—SIR CLAUD ALEXANDER, BT., Faygate Wood, Faygate, Sussex, for **Woburn Young Chartley 5th** 103, born March 17, 1920, bred by the Duke of Bedford, K.G., Woburn Abbey, Beds.; *s.* Woburn Young Chartley 35, *d.* Woburn Doris 3rd 496.

Class 174.—*Park Horned Cows or Heifers, in-milk, born in or before* 1919.[1]

1705 **I. (£15.)**—LORD DYNEVOR, 15, Lower Berkeley Street, London, W., for **Dynevor Dahlia** 34, born Aug. 29, 1918, calved May 22, 1922; *s.* Dynevor Snowball 9, *d.* Dynevor Alice 12 *by* Dynevor Tally Boy.

1704 **II. (£10.)**—LORD DYNEVOR, for **Dynevor Cowslip** 28, born June 21, 1918, calved Oct. 1, 1921; *s.* Dynevor Snowball 9, *d.* Dynevor Nest 50 *by* Borderer.

1703 **III. (£5.)**—SIR CLAUD ALEXANDER, BT., Faygate Wood, Faygate, Sussex, for **Faygate Swop 2nd** 74, born in 1914, calved May 8, 1922; *s.* Faygate Brace, *d.* Swop *by* Northrepps

British Friesians.

Class 175.—*British Friesian Bulls, born in or before* 1919.

1725 **I. (£15.)**—CHRISTOPHER WORDSWORTH, Brooklands, South Godstone, Surrey, for **Brooklands Ynte** 11145, born March 1, 1919; *s.* Brooklands Job-o-Work 7423, *d.* Brooklands Fryleigh 27724 *by* Kingswood (imported) Ynte 4047.

1710 **II. (£10.)**—MRS. PUTNAM and H. M. MARTINEAU, Farringdon, Exeter, for **Haydon** (imported 1922) **Bloemhof Pilot** 440 F.H.B.S.A., born Feb. 27, 1918, bred by A. and T. Murray, Bloemhof, Graaf Reinet, South Africa; *s.* Colonies Plaats Sailor Boy 707 S.A.S.B., *d.* Hartje 1836 S.A.S.B. *by* De Ruyter 5561 F.R.S.

1723 **III. (£5.)**—JAMES RUSSEL, Mapleton, Edenbridge, Kent, for **Kingswood Goldfinder** 6493, born Oct. 2, 1916, bred by Horace Hale, Tormare, Findon, Worthing; *s.* Kingswood (imported) Ynte 4047, *d.* Kingswood Bramfield 9272.

1719 **R. N.**—JOHN MASSON, Attimore Hall, near Hatfield, for **Kingswood Karel.**

H. C.—1718. **C.**—1722.

Class 176.—*British Friesian Bulls, born in* 1920.

1731 **I. (£15, & Champion.**[2]**)**—THE HACHE HERD, Muntham Home Farm, Findon, Worthing, for **Hache Cerjan Ulysses** 14165, born July 7; *s.* Hedges Second Series 6427, *d.* Wigginton Saakje 2nd 23144 *by* Wigginton (imported) Johan 4637.

1726 **II. (£10, & R. N. for Champion.**[2]**)**—ARTHUR ALLEN, Manor House, Chesterblade, Shepton Mallet, for **Kingswood Ynte Series** 14531, born June 17, bred by Horace Hale, Tormare, Findon, Worthing; *s.* Hedges Second Series 6427, *d.* Kingswood Gem 25202 *by* Kingswood (imported) Ynte 4047.

1727 **III. (£5.)**—W. H. CASE, The Manor, Gately, Elmham, Norfolk, for **Knebworth Ynte's Bold Boy** 14543, born May 11, bred by W. and R. Wallace, Swangleys, Knebworth, Herts; *s.* Kingswood (imported) Ynte 4047, *d.* Knebworth Cæsar's Tibby 2nd 34344 *by* Knebworth (imported) Cæsar 4065.

1729 **R. N.**—A. EADIE, Bosham Estate, near Chichester, for **Bosham John.**

H. C.—1733. **C.**—1738.

Class 177.—*British Friesian Bulls, born in* 1921.[3]

1740 **I. (£15.)**—G. B. RADCLIFFE, Pool Bank, Tarvin, Chester, for **Tarvin** (imported 1922), **Colonies Plaats Mazeppa,** born July 6, bred by A. A. Kingwill, Colonies Plaats, Graaf Reinet, S. Africa; *s.* Nels Rust Beatty 260 F.H.B.S.A., *d.* Colonies Plaats Peach 2258 S.A.S.B. *by* Equestrian of Gloria S.A.S.B.

1751 **II. (£10.)**—G. HOLT-THOMAS, North Dean House, Hughenden, Bucks, for **Northdean** (imported 1922), **Benchfield Marthus Beatty,** born Nov. 26, bred by Edgar J. Webb & Sons, Tweespruit, O.F.S., S. Africa; *s.* Admiral Beatty 987 S.A.S.B., *d.* Martha of Kopjeskraal 1597 S.A.S.B. *by* Adolf 256 S.A.S.B.

1754 **III. (£5.)**—JAMES RUSSEL, Mapleton, Edenbridge, for **Mapleton Foreman** 17953, born June 20; *s.* Lavenham Janus 6559, *d.* Terling Skylark 10th 31184 *by* Terling (imported) Vic Bertus 4541.

1742 **R. N.**—MISS GUEST, Inwood, Templecombe, Somerset, for **Dunninald Rijpmaster.**

H. C.—1746.

Class 178.—*British Friesian Cows, in-milk, born in or before* 1918.

1768 **I. (£15.)**—THE HACHE HERD, Muntham Home Farm, Findon, Worthing, for **Wigginton Saakje 2nd** 23144, black and white, born Oct. 6, 1915, calved Dec. 5, 1921, bred by E. Sehmer, Toat, Pulborough; *s.* Wigginton (imported) Johan 4637, *d.* Wigginton (imported) Saakje 10th 19768 *by* De Hoop 5406 F.R.S.

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[1] Prizes given by the Park Cattle Society.

[2] Champion Prize of £5 given by the British Friesian Cattle Society for the best Bull in Classes 175–177.

[3] Prizes given by the British Friesian Cattle Society.

1776 II. (£10.)—G. B. Radcliffe, Pool Bank Farm, Tarvin, Chester, for **Tarvin Garland** 31048, born March 6, 1917, calved May 26, 1922; *s.* Tarvin (imported) Pel Klaas 4521, *d.* Garton Tatton 1226 *by* Bombardier.

1770 III. (£5.)—G. Holt-Thomas, North Dean House, Hughenden, Bucks, for **Colton Sunray** 32650, born Oct. 31, 1918, calved Dec. 9, 1921, bred by Hugh Brown, Colton Mains, Dunfermline; *s.* Terling (imported) Vic Bertus 4541, *d.* Colton Sunset 6868 *by* Colton Puritan 95.

1782 R. N.—W. and R. Wallace, Knebworth, Herts, for **Bladen Gillian.**

H. C.—1761. **C.**—1764.

1762, 1806, 1828 (Cup.[1])—G. T. Eaton, Thurston Hall, Framfield, for **Petygards Ciros, Thurston Ellen** and **Thurston Karel Blossom.**

1764, 1808, 1830 (R. N. for Cup[1].)—Ethelbert Furness, Hamels Park, Buntingford, for **Hedges Familiar 2nd, Hamels Chatty** and **Hamels Froukje's Freule.**

Class 179.—*British Friesian Heifers, in-milk, born in* 1919.[2]

1788 I. (£15.)—Captain Richard G. Buxton, Petygards, Sporle, King's Lynn, for **Petygards Blackberry** 41308, born Sept. 17, calved March 20, 1922; *s.* Golf Botermijn 2nd 6327, *d.* Petygards Night Nurse 26092 *by* Petygards (imported) Bies Albert 4321.

1794 II. (£10.)—Longford Farms, Ltd., Longford Hall, Derby, for **Chaddesley Peggy** 37788, born March 6, calved Oct. 23, 1921, bred by J. H. Bean, C.B.E., Chaddesley Corbett, Kidderminster; *s.* Wychnor (imported) Yme 4709, *d.* Tredegar Peggy 16380 *by* Tredegar Courage 779.

1793 III. (£5.)—G. Holt-Thomas, North Dean House, Hughenden, Bucks, for **Brookside Bonnie Annie** 37514, born March 7, calved Jan. 11, 1922, bred by Harold B. Cooke, Homewood Gate, Lewes; *s.* Petygards (imported) Bles Albert 4321, *d.* Hedges Bonnie Annie 1698 *by* Hedges Hawkrigg Duke 293.

1787 R. N.—A. and J. Brown, Haydon Hill, Aylesbury, for **Hedges Albert's Violet.**

H. C.—1798.

Class 180.—*British Friesian Heifers, born in* 1920.[2]

1816 I. (£15, & Champion.[3])—J. Horridge, Plas Llanfair, Llanfair P.G., Anglesey, for **Llanfair** (imported 1922) **Melrose Diliana,** born April 15, bred by O. W. R. Evans, Melrose, Eastpoort, S. Africa; *s.* Paul 1465 S.A.S.B., *d.* Countess Rinske of Batavia 2511 S.A.S.B. *by* Arend 6519 F.R.S.

1808 II. (£10.)—Ethelbert Furness, Hamels Park, Buntingford, for **Hamels Chatty** 45622, born April 15; *s.* Dunninald Gaatsomairschaap 6175, *d.* Dunninald Daffodil 14520 *by* Dunninald Baron 1167.

1806 III. (£5.)—G. T. Eaton, Thurston Hall, Framfield, for **Thurston Ellen** 49368, born April 26; *s.* Kirkhill (imported) Karel 2nd 4051, *d.* Kirkhill Nellie 3rd 18274 *by* Colton Queen's Own 97.

1812 R. N.—G. Holt-Thomas, North Dean House, Hughenden, Bucks, for **Northdean Melbloem.**

H. C.—1799, 1811. **C.**—1800.

Class 181.—*British Friesian Heifers, born on or between January* 1, 1921, *and June* 30, 1921.

1834 I. (£15, & R. N. for Champion.[3])—Lt.-Col. W. E. Harrison, O.B.E., Wychnor Park, Burton-on-Trent, for **Wychnor Lornus** 58362, born Jan. 13; *s.* Wychnor Frits 7215, *d.* Colton Lornus 32634 *by* Terling (imported) Vic Bertus 4541.

1830 II. (£10.)—Ethelbert Furness, Hamels Park, Buntingford, for **Hamels Froukje's Freule** 53230, born March 27; *s.* Terling (imported) Vic Bertus 4541, *d.* Hedges (imported) Froukje 3rd 18050 *by* Ceres 4497 F.R.S.

1831 III. (£5.)—Lord Rayleigh, Terling, Witham, Essex, for **Terling** (imported 1922) **Harlens Collona,** born April 10, bred by Golden Valley Citrus Estates, Ltd., Mooi River, Natal, S. Africa; *s.* Harlens Ceres 643 F.H.B.S.A., *d.* Collona of Batavia 2506 S.A.S.B. *by* Friso 308 S.A.S.B.

1836 R. N.—G. Holt-Thomas, North Dean House, Hughenden, for **Northdean Bonnie Annie.**

H. C.—1828.

Class 182.—*British Friesian Heifers, born on or between July* 1, 1921, *and December* 31, 1921.[2]

1853 I. (£15.)—The Hache Herd, Muntham Home Farm, Findon, Worthing, for **Hache Akbram Vanilla** 53080, born Aug. 30; *s.* Clockhouse King Akrin 11321, *d.* Colton Bram Peppermint 28038 *by* Colton (imported) Vic Bram 3705.

1854 II. (£10.)—Lt.-Col. W. E. Harrison, O.B.E., Wychnor Park, Burton-on-Trent, for **Wychnor Mystic 2nd** 58366, born Aug. 14; *s.* Wychnor Frits 7215, *d.* Wychnor Mystic 42880 *by* Wychnor (imported) Yme 4709.

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[1] Silver Challenge Cup, value Fifty Guineas, given through the British Friesian Cattle Society for the best group of three Cows or Heifers in Classes 178–182.

[2] Prizes given by the British Friesian Cattle Society.

[3] Champion Prize of £5 given by the British Friesian Cattle Society for the best Cow or Heifer in Classes 178–182.

1862 **III. (£5.)**—CHRISTOPHER WORDSWORTH, Brooklands, South Godstone, Surrey, for **Brooklands Ymkje** 51080, born Nov. 1; *s.* Wychnor (imported) Yme 4709, *d.* Brooklands Princess Eirene 32252 *by* Tredegar (imported) Prince of Holland 4579.

1855 **R. N.**—W. and R. WALLACE, Knebworth, Herts, for **Knebworth** (imported 1922) **Cora Linn Maike's Zondag.**

H. C.—1852. **C.**—1849.

Jerseys.

N.B.—In the Jersey Classes the number inserted within brackets after the name of an animal indicates the number of such animal in the Island Herd Book. A number without brackets indicates that the animal is registered in the English Jersey Herd Book.

Class 183.—*Jersey Bulls, born in or before* 1919.

1868 **I. (£15, & Champion.[1])**—R. BRUCE WARD, Godinton, Ashford, Kent, for **Pilgrim** 13699, nearly whole colour, born April 14, 1919; *s.* Prometheus 13391, *d.* Ever-green *by* Catillon's Prince 11639.

1866 **II. (£10.)**—HERBERT CECIL PELLY, Kentwins, Nutfield, Surrey, for **Danbury Red King** 13535, whole colour, born June 9, 1919, bred by Brig.-Gen. J. T. Wigan, Danbury, Chelmsford; *s.* Red Ensign 13397, *d.* Mitylene *by* Topsy's Noble 10116.

1865 **III. (£5.)**—MISS C. BYNG LUCAS, Sutton House, Iford, Lewes, for **Culverden Pioneer** 13231, mulberry, born April 18, 1918; *s.* Pioneer's Noble 12416, *d.* La Sente's Fairy *by* Self Acting 11147.

1864 **R. N.**—COLONEL L. G. GISBORNE, C.M.G., Lingen Hall, Brampton Bryan, for **Don Cid.**

H. C.—1869.

Class 184.—*Jersey Bulls, born in* 1920.

1872 **I. (£15, & R. N. for Champion.[1])**—LT.-COL. THE HON. H. G. HENDERSON, C.V.O., Buscot Park, Faringdon, for **Danbury Majestic,** whole colour, born Aug. 17, bred by Brig.-Gen. J. T. Wigan, C.B., C.M.G., D.S.O., Danbury Park, Chelmsford; *s.* Red Ensign 13397, *d.* Mitylene (Vol. 27, p. 85), *by* Topsy's Noble 10116.

1874 **II. (£10.)**—S. G. HOUGH, Springhouse Park, Theydon Bois, Essex, for **Spring Gambowlina's Lad,** nearly whole colour, born June 23; *s.* Bowlina's Lad 12853, *d.* Golden Gamboline 2nd (Vol. 31, p. 296) *by* General Light 12312.

1873 **III. (£5.)**—CHARLES L. HILL, Harptree Court, East Harptree, Bristol, for **Wotton Aster,** whole colour, born Aug. 29, bred by Mrs. Evelyn, Wotton House, Dorking; *s.* Wotton Beauteous Cloud 13796, *d.* Wotton Parquerette (Vol. 26, p. 416) *by* Illustrious 10289.

1870 **R. N.**—ALFRED E. BOND, Wannerton Farm, Kidderminster, for **Italicus.**

H. C.—1871.

Class 185.—*Jersey Bulls, born in* 1921.[2]

1886 **I. (£15.)**—MAJOR THE HON. HAROLD PEARSON, Cowdray Park, Midhurst, Sussex, for **Cowdray Pioneer 5th,** whole colour, born April 1; *s.* Pioneer's Noble 12416, *d.* **Noble's** Buttercup (Vol. 29, p. 327) *by* Goddington Noble 6th 11332.

1895 **II. (£10.)**—MRS. EDGAR WATTS, Eastwood Park, Falfield, Glos., for **Golden Bracken,** broken colour, born Jan. 16, bred by Horace Walker, Stoke Bishop, Bristol; *s.* Lizzie's Boy 13639, *d.* Fairy Queen's Fern (Vol. 25, p. 327) *by* Golden Fern's Noble 10626.

1894 **III. (£5.)**—R. BRUCE WARD, Godinton, Ashford, Kent, for **Plutarch,** whole colour, born March 21; *s.* Pilgrim 13699, *d.* Arkona (Vol. 31, p. 222), *by* Rower 11134.

1879 **R. N.**—MRS. G. J. AUSTIN, Ellern Mede, Totteridge, Herts, for **Mascot.**

H. C.—1884, 1885, 1888, 1891, 1893. **C.**—1896.

Class 186.—*Jersey Cows, in-milk, born in or before* 1918.

1934 **I. (£15, & Champion.[3])**—R. BRUCE WARD, Godinton, Ashford, Kent, for **Ida** (Vol. 28, p. 277), whole colour, born March 15, 1914, calved March 29, 1922, bred by Major J. Baldwin, Alvechurch; *s.* Antidote 10843, *d.* Matilda *by* Marshall MacMahon 9695.

1909 **II. (£10, & R. N. for Champion.[3])**—MRS. EVELYN, Wotton House, Dorking, for **Dahlia 4th** (Vol. 28, p. 254), whole colour, born Oct. 25, 1912, calved June 4, 1922, bred by A. W. Ruggles-Brise, Spains Hall, Braintree; *s.* Midsummer 11064, *d.* Dahlia 2nd *by* Chorister 6815.

1932 **III. (£5.)**—R. BRUCE WARD, for **Elfrida** (Vol. 31, p. 271), whole colour, born June 26, 1917, calved April 18, 1922, bred by the late Countess Roberts, Englemere, Ascot; *s.* Gipsy's Castor 12316, *d.* Gazefreda *by* Gazehound 10614.

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[1] Champion Prize of £5 given by the English Jersey Cattle Society for the best Bull in Classes 183–185.

[2] Prizes given by the English Jersey Cattle Society.

[3] Champion Prize of £5 given by the English Jersey Cattle Society for the best Cow or Heifer in Classes 186–189.

1933 **R. N.**—R. BRUCE WARD, for **Evergreen.**
1924 **Special.**[1]—LORD ROUNDWAY, Roundway Park, Devizes, for **Chattilon.**
1911 **R. N. for Special.**[1]—MRS. EVELYN, for **Wotton Pink May.**
H. C.—1904, 1908, 1911, 1912, 1924, 1925, 1926, 1935. **C.**—1905, 1920, 1931.

Class 187.—*Jersey Heifers, in-milk, born in* 1919.[2]

1955 **I. (£15, & Special.**[3]**)**—A. W. RUGGLES BRISE, Spains Hall, Braintree, for **Red May** (Vol. 32, p. 438), whole colour, born Dec. 12, calved April 16, 1922; *s.* Allora's Prince 12524, *d.* Mayflower 2nd *by* Minorca's Jolly Sultan 12076.
1959 **II. (£10, & R. N. for Special.**[3]**)**—R. BRUCE WARD, Godinton, Ashford, Kent, for **Piquant** (Vol. 31, p. 120), whole colour, born April 21, calved May 15, 1922; *s.* Prometheus 13391, *d.* Caper *by* Capsicum 10892.
1952 **III. (£5.)**—J. H. N ROBERTS, Weybeards Farm, Harefield, Middlesex, for **Ora's Gem,** broken colour, born Feb. 22, calved April 24, 1922, bred by R. Gorvel, St. Saviours, Jersey; *s.* Cowslip Noble of Grainville 19225, *d.* Ora's Belle (20557) *by* Pepper Mint (4762).
1956 **R. N.**—MRS. HAYES SADLER, Norsbury, Sutton Scotney, Hants, for **Rapkyns Perfume.**
H. C.—1941, 1945, 1946. **C.**—1938, 1944, 1961.

Class 188.—*Jersey Heifers, in-milk, born in* 1920.[2]

1967 **I. (£15.)**—COLONEL L. G. GISBORNE, C.M.G., Lingen Hall. Brampton Bryan, for **Snowflake** (Vol. 32, p. 93), whole colour, born Jan. 11, calved June 1, 1922, bred by A. S. Marsden Smedley, Normanhurst, Matlock; *s.* Oxford's Viking 13062, *d.* Crocus *by* Octavias Fern's Noble 11477.
1965 **II. (£10.)**—MRS. EVELYN, Wotton House, Dorking, for **Willonyx Grey Girl,** whole colour, born Feb. 10, calved May 22, 1922, bred by T. M. W. Avril, St. Ouens, Jersey; *s.* Eagle's Grey Boy (5395), *d.* Willonyx 2nd (22206).
1976 **III. (£5.)**—MAJOR THE HON. HAROLD PEARSON, Cowdray Park, Midhurst, Sussex, for **Pioneer's Lady** (Vol. 32, p. 104), whole colour, born April 25, calved May 11, 1922; *s.* Pioneer's Noble 12416, *d.* Plymouth Lady *by* Redskin 11822.
1979 **R. N.**—J. H. N. ROBERTS, Weybeards Farm, Harefield, Middlesex, for **Lady Memento.**
H. C.—1962, 1969, 1982, 1987, 1988. **C.**—1968, 1970, 1973.

Class 189.—*Jersey Heifers, born in* 1921.

1999 **I. (£15.)**—LT.-COL. THE HON. H. G. HENDERSON, C.V.O., Buscot Park, Faringdon, for **Peaceful,** whole colour, born April 16; *s.* Goldfinder (Vol. 31, p. 55), *d.* Armistice (Vol. 30, p. 94) *by* Wimbourne 12805.
2005 **II. (£10.)**—J. PIERPONT MORGAN, Wall Hall, Aldenham, Watford, for **Aldenham Treasure,** whole colour, born June 26; *s.* The Sweep (5671), *d.* Penling Treasure *by* Dairylikes Majesty (5380).
1994 **III. (£5.)**—GEORGE CROSS, British Empire Hotel, De Vere Gardens, London, W., for **Gloxalia 2nd,** whole colour, born March 19, bred by C. Taylor, Ninehams, Caterham; *s.* King Capsicum 12980, *d.* Gloxalio (Vol. 25, p. 341) *by* Fairy's Duc 10597.
2000 **R. N.**—S. G. HOUGH, Springhouse Park, Theydon Bois, for **Spring Constance.**
H. C.—1993, 1997, 2007, 2009, 2014, 2015, 2019, 2020, 2022. **C.**—2012.

Guernseys.

N.B.—Unless otherwise stated the numbers refer to the English Guernsey Herd Book.

Class 190.—*Guernsey Bulls, born in or before* 1919.

2023 **I. (£15, & Champion.**[4]**)**—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, Devon, for **Hammill of Marazion** 3334, fawn and white, born Dec., 14, 1916, bred by Lady Margaret Boscawen, Tregye, Perranwell, Cornwall; *s.* Tregonning Good Friday 2nd 2661, *d.* Fancy 7634 *by* Eryngium 2016.
2030 **II. (£10.)**—ALBERT PEAKE, St. Catherines, Coton, Cambs, for **Golden Noble of New Volante** 3940, fawn and white, born April 8, 1919, bred by W. Le Ruez, New Volante, St. Saviours, Guernsey; *s.* Admiral des Ruettes 3839 P.S., R.G.A.S., *d.* Fanny of la Maison 4150 P.S., R.G.A.S. *by* Dick of Rocher 2nd 1328 P.S., R.G.A.S.
2031 **III. (£5.)**—LORD POLTIMORE, Court Hall, North Molton, Devon, for **Pearl's Majestic** 3999, fawn and white, born April 27, 1919, bred by Mrs. T. Le Prevost, L'Etiennerie, Castel, Guernsey; *s.* Queen's Fancy 4031, P.S., R.G.A.S., *d.* Nicolle's Pearl 16975 P.S., R.G.A.S. *by* Governor's Pearl 3428 P.S., R.G.A.S.
2035 **R. N.**—E. J. WYTHES, Copped Hall, Epping, for **Noble Boy of Myrtle Place.**
H. C.—2018, 2024, 2026, 2032, 2033, 2034. **C.**—2025, 2027, 2029.

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[1] Special Prize of £10 given by the English Jersey Cattle Society for the best Cow in Class 186, bred by Exhibitor and sired in Great Britain or Ireland.

[2] Prizes given by the English Jersey Cattle Society.

[3] Special Prize of £10 given by the English Jersey Cattle Society for the best Heifer in Classes 187 and 188, bred by Exhibitor and sired in Great Britain or Ireland.

[4] Champion Prize of £5 given by the English Guernsey Cattle Society for the best Bull in Classes 190–192.

Class 191.—*Guernsey Bulls, born in* 1920.[1]

2036 **I. (£15, & R. N. for Champion.[2])**—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, Devon, for **Elfordleigh Hammill** 4185, fawn and white, born May 4 ; *s.* Hammill of Marazion 3334, *d.* Trequean Maggie 3rd 11772 *by* Trequean Arthur 2675.

2045 **II. (£10.)**—MRS. FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for **President of Vimiera** 4284, fawn and white, born April 17, bred by F. Belloir, Vimiera, St. Peter Port, Guernsey ; *s.* Queen's Fancy 4038 P.S., R.G.A.S., *d.* Flora 3rd of Vimiera 12694 P.S., R.G.A.S. *by* Deanie's Squire 2734 P.S., R.G.A.S.

2040 **III. (£5.)**—THE RT. HON. SIR FREDERICK HALSEY, BT., Gaddesden Place, Hemel Hempstead, for **Governor Quin des Ruettes** 4501, red fawn and white, born Sept. 4, bred by Mrs. J. Naftel, St. Saviours, Guernsey ; *s.* Polly's Governor 2nd des Ruettes 4168 P.S., R.G.A.S., *d.* Queen 3rd des Ruettes 15007 P.S., R.G.A.S. *by* Prince of La Croisee 3213 P.S., R.G.A.S.

2038 **R. N.**—J. B. BODY, Hindhead Court, Hindhead, Surrey, for **Hindhead Peter.**

H. C.—2039, 2041, 2044, 2046, 2047, 2048. **C.**—2037, 2042.

Class 192.—*Guernsey Bulls, born in* 1921.

2049 **I. (£15.)**—H.R.H. THE DUCHESS OF ALBANY, Claremont, Esher, for **Claremont Kingcup** 4429, fawn and little white, born April 1 ; *s.* Elfordleigh Prince 3511, *d.* Bosistow Marigold 11154 *by* Godolphin Sambo 2450.

2060 **II. (£10.)**—MRS. PRATT-BARLOW, Lynchmere House, Haslemere, for **Lynchmere Lord Roberts 17th** 4537, fawn and white, born Aug. 11 ; *s.* Roberts Boy's Sequel 2496, *d.* Lynchmere Violet 2nd 12217 *by* Polly's Ideal of Maison de Bas 3198.

2059 **III. (£5.)**—MRS. PRATT-BARLOW, for **Godwin's May Day** 4496, lemon and white, born May 24, bred by David Michie, Godwins, Alresford ; *s.* Godwins Manor 3936, *d.* Itchen Mayflower 2nd 12150 *by* Itchen Gay Boy 2779.

2052 **R. N.**—MAJOR F. B. DALRYMPLE, Bartley Lodge, Cadnam, Hants, for **Bartley Governor 5th.**

H. C.—2050, 2051, 2053, 2055, 2056, 2057, 2062. **C.**—2061.

Class 193.—*Guernsey Cows, in-milk, born in or before* 1917.

2066 **I. (£15, & Champion.[3])**—J. B. BODY, Hindhead Court, Hindhead, Surrey, for **Blue Bell of Goodnestone** 10493, fawn and white, born April 9, 1914, calved May 12, 1922, bred by H. Fitzwalter Plumptre, Goodnestone Park, Canterbury ; *s.* Royal Sequel 2511, *d.* Ashburnham Bluebell 7529 *by* Charmant of the Gron 1809.

2077 **II. (£10, & R. N. for Champion.[3])**—MAJOR SAYER, D.S.O., M.C., Platnix Farm House, Westfield, Sussex, for **Stagenhoe Rose of Gold** 11699 F.S., fawn and white, born Nov. 20, 1910, calved June 9, 1922, bred by R. E. Chilcott, Clovelly, Guernsey.

2072 **III. (£5.)**—MRS. W. HOWARD PALMER, Murrell Hill, Binfield, Berks, for **Murrell Robina** 11571, red and white, born April 25, 1915, calved May 17, 1922 ; *s.* Murrell New King 2802, *d.* Bob 27th 7169 *by* Champion of the Bourg 1808.

2075 **R. N.**—O. PORTMAN RUBECK, Valencia, Meath Green, Horley, for **Fleury's Rosy 3rd.**

H. C.—2065, 2067, 2069, 2071, 2073, 2074, 2079, 2081.

Class 194.—*Guernsey Cows or Heifers, in-milk, born in* 1918 *or* 1919.[1]

2090 **I. (£15.)**—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for **Butterwort of Goodnestone 4th** 13317, fawn and white, born Nov. 22, 1918, calved June 24, 1922 ; *s.* Rose Lad of Goodnestone 3163, *d.* Butterwort 10th 9882 *by* Fleur de Lys 5th 2264.

2091 **II. (£10.)**—SIR JAMES REMNANT, BT., M.P., The Grange, Hare Hatch, Twyford, Berks, for **Dene Treacle 2nd** 14230, dark fawn and white, born March 31, 1919, calved June 10, 1922 ; *s.* Sequel's Victor 2nd 3591, *d.* Dene Treacle 11248 *by* Dene Dandy 2720.

2083 **III. (£5.)**—J. B. BODY, Hindhead Court, Hindhead, Surrey, for **Lynchmere Rosy** 13731, fawn and white, born Aug. 12, 1918, calved May 4, 1922, bred by Mrs. Pratt-Barlow, Lynchmere House, Haslemere ; *s.* Sequel's Delight 2nd 3403, *d.* Rosey of Goodnestone 12343 *by* Gunner 3rd 2459.

2086 **R. N.**—E. R. DEBENHAM, Bladen Dairy Farms, Briantspuddle, Dorset, for **Bladen Marjorie.**

H. C.—2084, 2085.

Class 195.—*Guernsey Heifers, born in* 1920.[1]

2098 **I. (£15.)**—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for **Wintergreen of Goodnestone 6th** 16020, fawn and white, born Jan. 2 ; *s.* Favourite 2nd of the Barras 3516, *d.* Wintergreen 9th 10435 *by* Golden Noble 1930.

2092 **II. (£10.)**—H.R.H. THE DUCHESS OF ALBANY, Claremont, Esher, for **Claremont Sweet Pea** 15156, fawn and white, born Feb. 2 ; *s.* Brittleware Princeling 3282, *d.* Claremont Clover 12628 *by* Duvaux Gift 2938.

2093 **III. (£5.)**—W. R. ARBUTHNOT, Plawhatch Farm, Sharpthorne, East Grinstead, for **Plawhatch Shamrock** 15687, lemon and white, born Jan. 30 ; *s.* Downe Romulus 3504, *d.* Rushington Shamrock 3rd 8243 *by* Bonnie's Pride 1803.

2097 **R. N.**—ALBERT PEAKE, St. Catharines, Coton, Cambs, for **Durrington Beauty 6th.**

H. C.—2094, 2095, 2099, 2100.

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[1] Prizes given by the English Guernsey Cattle Society.

[2] Champion Prize of £5 given by the English Guernsey Cattle Society for the best Bull in Classes 190–192.

[3] Champion Prize of £5 given by the English Guernsey Cattle Society for the best Cow or Heifer in Classes 193–196.

Class 196.—*Guernsey Heifers, born in* 1921.

2107 **I. (£15.)**—J. B. Body, Hindhead Court, Hindhead, Surrey, for **Hindhead Polly 16602,** fawn and white, born May 30; *s.* Slogan de Bon Espoir 4817, *d.* Polly of the Isles of Goodnestone 3rd 14671 *by* Rose Lad of Goodnestone 3163.

2120 **II. (£10.)**—G. Percy Sanday, Puddington Hall, Neston, Cheshire, for **Eastern Rosetta** 16433, fawn and white, born July 3, bred by Mrs. R.E. Parker, Easton Hall, Norwich; *s.* Nelly's Noble of La Ruette 3771, *d.* **Eastern** Rosette's Delight of Duvallerie 13479 *by* My Delight of Park Farm 3752 P.S., R.G.A.S.

2115 **III. (£5.)**—Lord Poltimore, Court Hall, North Molton, Devon, for **Poltimore Mona** 16870, fawn and white, born April 12; *s.* Pearl's Majestic 3999, *d.* Molly 2nd of Les Blancs Bois 14609 *by* Prince of Les Blancs Bois 3808 P.S., R.G.A.S.

2118 **R. N.**—O. Portman Rubeck, Valencia, Meath Green, Horley, for **Valencia Neroli.**

H. C.—2103, 2104, 2105, 2108, 2109, 2110, 2112, 2114, 2116, 2117, 2119.

C.—2102, 2113, 2123, 2124.

Kerries.

N.B.—In the Kerry Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Kerry Herd Book. A number without brackets indicates that the animal is registered in the English Kerry Herd Book.

Class 197.—*Kerry Bulls, born in or before* 1920.

2128 **I. (£15, & R. N. for Champion.[1])**—Lady Fitzgerald, Buckland House, Faringdon, for **Buckland Viking** 470, born April 23, 1920, bred by Laurence Currie, Minley Manor, Farnborough; *s.* Minley Alexander 479, *d.* Minley Audrey 2281 *by* Minley Mars 362.

2127 **II. (£10.)**—Mrs. de Lavis-Trafford, Thakeham House, Coolham, Sussex, for **Castle Lough O'Connell** (1051), born April 4, 1920, bred by John Hilliard, The Lake Hotel, Killarney; *s.* Castle Lough Oliver (431), *d.* Castle Lough Olive 2nd (4128) *by* Castle Lough Larry (765).

2132 **III. (£5.)**—Bertram W. A. Watney, Chaldon Mead, Caterham, Surrey, for **Castle Lough Eddie,** born March 9, 1920, bred by John Hilliard, The Lake Hotel, Killarney; *s.* Castle Lough Oliver (431), *d.* Ellengrane 16th 2049 *by* Kilmorna Duke (513).

2126 **R. N.**—Laurence Currie, Minley Manor, Farnborough, for **Sloe Drop.**

H. C.—2125, 2129, 2130.

Class 198.—*Kerry Bulls, born in* 1921.[2]

2139 **I. (£15.)**—Capt. Nelson Zambra, M.C., and C. W. Milne, West Tisted Manor, Ropley, Hants, for **Valencia Samson,** born April 22, bred by the Knight of Kerry, Valencia Island, co. Kerry; *s.* Czar of Carton (920), *d.* Valencia Fina (4285) *by* Valencia Chief (852).

2133 **II. (£10.)**—Laurence Currie, Minley Manor, Farnborough, for **Minley Major** 518 born March 1; *s.* Sloe Drop 415, *d.* Minley Daisy 1977 *by* La Mancha Paddy 258.

2136 **III. (£5.)**—L. Harrison & Co., Ltd., Pedigree Live Stock Farms, Coolham, Sussex, for **Southwater Duke,** born June 22; *s.* Mangerton Dermot 4th 405, *d.* Coquet Dabchick 2038 *by* La Mancha Lifeguard 284.

2138 **R. N.**—John W. Towler, Wadlands Hall, Farsley, Leeds, for **Valencia Beaver.**

H. C.—2135, 2137.

Class 199.—*Kerry Cows, in-milk, born in or before* 1918.

2150 **I. (£15, & Champion.[1])**—Capt. Nelson Zambra, M.C., and C. W. Milne, West Tisted Manor, Ropley, Hants, for **Castle Lough Nina** 2109, born March 3, 1915, calved May 22, 1922, bred by John Hilliard, Castle Lough Hotel, Killarney; *s.* Castle Lough Duke 2nd (766), *d.* Castle Lough Nesta (3866) *by* Castle Lough William (701).

2145 **II. (£10.)**—John W. Towler, Wadlands Hall, Farsley, Leeds, for **Gort Primrose 8th** 2260, born March 16, 1912, calved May 21, 1922, bred by D. M. Rattray, Ballybunion, co. Kerry; *s.* Gort Peter (688), *d.* Gort Primrose 3rd (3462) *by* Gort Earl (597).

2149 **III. (£5.)**—Capt. Nelson Zambra, M.C., and C. W. Milne, for **Castle Lough Cowslip 4th** 2238, born March 3, 1917, calved June 6, 1922, bred by John Hilliard, Castle Lough Hotel, Killarney; *s.* Castle Lough Dermott 377, *d.* Castle Lough Cowslip 3rd 2023 *by* Castle Lough Rover (746).

2140 **R. N.**—Miss P. de B. Bowen-Colthurst, Layer Fields, Layer-de-la-Haye, Colchester, for **Castlelough Connie.**

H. C.—2141, 2144, 2146. **C.**—2148.

Class 200.—*Kerry Heifers, in-milk, born in* 1919 *or* 1920.

2155 **I. (£15.)**—John W. Towler, Wadlands Hall, Farsley, Leeds, for **Wadlands Foxglove** 2326, born Aug. 21, 1919, calved March 3, 1922, bred by Mrs. Fowle, Taitlands, Stainforth, Settle; *s.* Othello 391, *d.* Wadlands Flora 2325 *by* Pendle Herald 329.

2157 **II. (£10.)**—Capt. Nelson Zambra, M.C., and C. W. Milne, West Tisted Manor, Ropley, Hants, for **Hattingley Harmony** 2624 F.S., born in 1920, calved April 25, 1922, breeder unknown.

[1] Silver Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best animal in Classes 197–201.

[2] Prizes given by the English Kerry and Dexter Cattle Society.

2152 **III. (£5.)**—Lady Fitzgerald, Buckland House, Faringdon, for **Buckland Joybell,** born Nov. 16, 1919, calved April 6, 1922; *s.* Minley Victory 406, *d.* Walton Harebell 1619 F.S.
2156 **R. N.**—John W. Towler, for **Wadlands Mona.**
H. C.—2153, 2154.

Class 201.—*Kerry Heifers, not in milk, born in* 1920 *or* 1921.[1]

2167 **I. (£15.)**—Capt. Nelson Zambra, M.C., and C. W. Milne, West Tisted Manor, Ropley, Hants, for **Hattingley Hermione,** born May 5, 1921, bred by Capt. Nelson Zambra; *s.* Hattingley Homer 477, *d.* Hattingley Harebell 2266, F.S.
2164 **II. (£10.)**—John W. Towler, Wadlands Hall, Farsley, Leeds, for **Wadlands Doris,** born May 7, 1921; *s.* Ard Caein Dubh Tim 465, *d.* Wadlands Dorothy 2324 *by* Pendle Herald 329.
2158 **III. (£5.)**—Laurence Currie, Minley Manor, Farnborough, for **Minley Mione,** born March 1, 1921; *s.* Sloe Drop 415, *d.* Minley Marchioness 2158 *by* Minley Lad 324.
2163 **R. N.**—John W. Towler, for **Wadlands Clover.**
H. C.—2160, 2162, 2165, 2168, 2169.

Dexters.

N.B.—In the Dexter Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Dexter Herd Book. A number without brackets indicates that the animal is registered in the English Dexter Herd Book.

Class 202.—*Dexter Bulls, born in or before* 1920.

2172 **I. (£15.)**—Edward Davies, Pontarfran, Brecon, for **Pontarfran Rifleman,** born Jan. 29, 1920; *s.* Fillongley Forester 630, *d.* Ardudwy 2381 *by* Fillongley Foreman 562.
2181 **II. (£10.)**—Mrs. Humphrey R. Pelly, Lyndsays Farm, Ingatestone, for **Lyndsays Leopard** 745, born April 4, 1920; *s.* Slogan of Claragh 624, *d.* Bagendon Little Brenda 3rd 2560 *by* Peppercorn 534.
2171 **III. (£5.)**—Mrs. Frank Atherton Brown, Bourton Hill House, Moreton-in-Marsh, Glos., for **Bourton Hill Jock,** born April 19, 1920; *s.* La Mancha Tiny Tim 668, *d.* La Mancha Well Well 2648 F.S.
2170 **R. N.**—H. D. Betteridge, 2, Albany Mansions, Bexhill-on-Sea, for **Summerhill Jack.**
H. C.—2180.

Class 203.—*Dexter Bulls, born in* 1921.[1]

2182 **I. (£15, R. N. for Champion,[2] & Champion.[3])**—Lady Kathleen Hare, Brokenhurst Park, Brockenhurst, Hants, for **Brokenhurst Florian** 724, born March 16; *s.* Brokenhurst Marella 561, *d.* Brokenhurst Flora 1856 *by* Cloister 463.
2183 **II. (£10.)**—Lady Kathleen Hare, for **Brokenhurst Philip** 726, born March 13; *s.* Brokenhurst Morella 651, *d.* Peach Blossom of Claragh 2535 *by* Gort Ned 5th (607).
2186 **III. (£5.)**—Theo. A. Stephens, Hookstile House, South Godstone, Surrey, for **Hever Rex** 741, born March 11, bred by Col. the Hon. Ben Bathurst, Furnace Farm, Cowden; *s.* Brookhampton Monarch 693, *d.* Epsilon *by* Hever Boy 610.
2187 **R. N.**—John H. Wootton, Byford, Hereford, for **Byford Laddie.**
H. C.—2185, 2188. **C.**—2184.

Class 204.—*Dexter Cows, in-milk, born in or before* 1918.

2193 **I. (£15, & Champion.[3])**—Lady Kathleen Hare, Brockenhurst Park, Brockenhurst, Hants, for **Peach Blossom of Claragh** 2535, born Feb. 21, 1917, calved April 19, 1922, bred by D. M. Rattray, Gortneskhy, Ballybunion; *s.* Gort Ned 5th (607), *d.* Gort Peach 9th (2540) *by* Gort Fred 2nd (584).
2198 **II. (£10.)**—Alfred C. King, Braishfield Manor, Romsey, Hants, for **La Mancha Madeline** 2272 F.S., born in March, 1913, calved May 16, 1922, breeder unknown.
2201 **III. (£5.)**—Mrs. Nutt, Hampton House, Hampton-in-Arden, for **Fillongley Farola** 2487, born Oct. 23, 1917, calved May 13, 1922; *s.* General Manager 523, *d.* Dewberry 2239 *by* Sloeberry 594.
H. C.—2189, 2192, 2199.

Class 205.—*Dexter Heifers, in-milk, born in* 1919 *or* 1920.

2213 **I. (£15.)**—Theo. A. Stephens, Hookstile House, South Godstone, Surrey, for **Hookstile Lady Macbeth,** born June 30, 1920, calved April 2, 1922; *s.* Summerhill George 685, *d.* Gamma 2108 *by* Cowbridge General 385.

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[1] Prizes given by the English Kerry and Dexter Cattle Society.

[2] Silver Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best animal in Classes 202–206.

[3] Silver Challenge Breeders Bowl, value Ten Guineas, given through the English Kerry and Dexter Cattle Society for the best animal in Classes 202 to 206, already registered in the English Kerry and Dexter Herd Book, the progeny of sire and dam already registered.

2208 **II. (£10.)**—Lady Kathleen Hare, Brokenhurst Park, Brockenhurst, Hants, for **Brokenhurst Woodbine** 2711, born Feb. 9, 1920, calved Feb. 21, 1922; *s.* Brokenhurst Rufus 601, *d.* Gort Woodbine 7th 2498 *by* Gort Fred (569).

2211 **III. (£5.)**—Lady Loder, Clock House, Cowfold, Sussex, for **Gunstead Flora** 2767, born Dec. 20, 1919, calved April 1, 1922; *s.* Braishfield Patrick 599, *d.* Gunstead Fieldfare 2252 *by* Oakridge Marston Knight 488.

2214 **R. N.**—Theo. A. Stephens, for **Hookstile Moranda.**

H. C.—2204, 2209, 2212.

Class 206.—*Dexter Heifers, not in milk, born in* 1920 *or* 1921.[1]

2224 **I. (£15, & R. N. for Champion.[2])**—Alfred C. King, Braishfield Manor, Romsey, Hants, for **Braishfield Black Tulip,** born Sept. 28, 1920; *s.* Black Mark 643, *d.* Braishfield Bloom 2300 *by* Home Rule 563.

2230 **II. (£10.)**—Mrs. Nutt, Hampton House, Hampton-in-Arden, for **Fillongley Forest Flower,** born Sept. 9, 1920; *s.* Fillongley Forester 630, *d.* Fillongley Freesia 2491.

2216 **III. (£5.)**—Mrs. Frank Atherton Brown, Bourton Hill House, Moreton-in-Marsh, Glos., for **Bourton Hill Precious,** born Nov. 8, 1920; *s.* **La Mancha** Tiny Tim 668, *d.* La Mancha Wendy 2649 F.S.

2219 **R. N.**—Guy M. Gibbs, Gratwicke Hall, Flax Bourton, Somerset, for **Barrow Buttercup 11th.**

H. C.—2217, 2225, 2227, 2228, 2231. **C.**—2233.

Blue Albion Cattle.

Class 207.—*Blue Albion Bulls, born in or before* 1921.

2238 **I. (£15.)**—Captain J. E. N. Holden, The Grange, Southam, Rugby, for **Bradbourne Goalkeeper** IX 375, bred by H. Borne, Brown Bank, Staffs.

2237 **II. (£10.)**—Lt.-Col. W. E. Harrison, O.B.E., Wychnor Park, Burton-on-Trent, for **England's Glory** 49, breeder and age unknown.

2236 **III. (£5.)**—A. T. Greenslade, Little Walden Park, Saffron Walden, for **Primley Melville** 97, born in Oct. 1919, bred by H. Whitley, Primley, Paignton.

2243 **R. N.**—Randolph Tory, Charisworth Manor, Blandford, for **Bank Romeo.**

Class 208.—*Blue Albion Cows or Heifers, in-milk, born in or before* 1919.[3]

2250 **I. (£15.)**—Arthur Trafford, Dulands Farm, Bradbourne, Ashbourne, for **Bradbourne Future Princess** 11 x 15, born in 1917, calved June 18, bred by T. Proctor, Chipping, Lancashire.

2247 **II. (£10.)**—Captain J. E. N. Holden, The Grange, Southam, Rugby, for **Bank Flame** IX 123, born in 1918, due to calve before the Show, bred by John Seals, Haben Grange, Derbyshire.

2246 **III. (£5.)**—Lt.-Col. W. E. Harrison, O.B.E., Wychnor Park, Burton-on-Trent, for **Barton Nellie,** breeder and age unknown, calved May 23, 1922.

Class 209.—*Blue Albion Heifers, born in* 1920 *or* 1921.[3]

2252 **I. (£15.)**—M. M. and C. E. Harvey, Illington, Thetford, for **Sherwood Lupin,** born Nov. 26, 1920, bred by J. Keston, Uphall, Garboldisham, Attleborough.

2253 **II. (£10.)**—Capt. A. V. Milton, Grasmere, Birstwith, Harrogate, for **Barton Lily** 112, born Jan. 3, 1920, breeder unknown.

2259 **III. (£5.)**—Randolph Tory, Charisworth Manor, Blandford, for **Charisworth Tory** 40 X 28, born July 1, 1920.

2254 **R. N.**—J. R. Oliver, Elsing Manor, East Dereham, for **Lacton Bluebell,** born Feb. 26, 1920; *s.* Beccles Dairyman, *d.* Roaney.

H. C.—2260.

Milk Yield Classes.

Class 210.—*Dairy Shorthorn Cows or Heifers.*

1036 **I. (£15, & Champion.[4])**—Major S. P. Yates, for **Fair Rosamond.** (See Class 107.)

1032 **II. (£10.)**—J. M. Strickland, Bainesse, Catterick, for **Keyingham Dairymaid 5th** (Vol. 66, p. 1081), roan, born Jan. 2, 1913, calved May 27, 1922, bred by J. Tuton, Keyingham, Hull; *s.* Brandsby's Aristocrat 107987, *d.* Keyingham Dairymaid 4th *by* Brandsby's Lord Derwent 9th 101608.

1042 **III. (£5.)**—Chivers & Sons, Ltd., for **Histon Wild Queen.** (See Class 108.)

H. C.—1030, 1053, 1054, 1058.

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[1] Prizes given by the English Kerry and Dexter Cattle Society.

[2] Silver Challenge Breeders Bowl, value Ten Guineas, given through the English Kerry and Dexter Cattle Society for the best animal in Classes 202 to 206, already registered in the English Kerry and Dexter Herd Book, the progeny of sire and dam already registered.

[3] Prizes given by the Blue Albion Cattle Society.

[4] **Champion Prize of £30, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Dairy Shorthorn, Lincolnshire Red Shorthorn, Devon, South Devon, Longhorn, Red Poll and British Friesian Milk Yield Competitions.**

Class 211.—*Non-Pedigree Dairy Shorthorn Cows or Heifers.*

1128 **I. (£15.)**—James Batten, for **Stella.** (See Class 111.)

1131 **II. (£10.)**—J. L. Shirley, for **Graceful.** (See Class 111.)

1129 **III. (£5.)**—Charles J. Beechener, for **Faldo Queen.** (See Class 111.)

Class 212.—*Lincolnshire Red Shorthorn Cows or Heifers.*

1169 **I. (£15.)**—Stanley Blundell, Bendish House, Welwyn, Herts., for **Bendish Ada 2nd** (Vol. 21, p. 282), born Nov. 18, 1914, calved May 23, 1922; *s.* Bracebridge Prince 2nd 7364, *d.* Bendish Ada *by* Crimson Boy 4772.

1171 **II. (£10.)**—Stanley Blundell, for **Bendish Cherry 2nd** (Vol. 22, p. 325), born June 1, 1915, calved June 3, 1922; *s.* Canwich Bendish 15th 9727, *d.* Bendish Cherry *by* Crimson Boy 4772.

1182 **III. (£5.)**—Lt.-Col. Sir A. G. Weigall, K.C.M.G., Petwood, Woodhall Spa, for **Ranby Lucy 2nd,** age unknown, calved May 11, 1922, bred by Sir W. H. Cooke, Bt., Ranby, Lincs.; *s.* Stenigot Flower Knight 7904, *d. by* Saltfleet Matchless 4959.

Class 213.—*Devon Cows or Heifers.*[1]

1330 **I. (£15.)**—W. G. Busk, for **Wraxall Bluebell.** (See Class 130.)

1333 **II. (£10.)**—John H. Chick, for **Wynford Pill.** (See Class 130.)

1328 **III. (£5.)**—W. G. Busk, for **Suffragette 1st** 26561, born Feb. 1, 1913, calved May 28, 1922, bred by R. A. Clarke, Chiselborough, Stoke-under-Ham, Somerset; *s.* Rainbow Goodman 6888, *d.* Suffragette *by* Durston Taleteller 5764.

H. C.—1332.

Class 215.—*Longhorn Cows or Heifers.*

1308 **I. (£15.)**—W. Hanson Sale, for **Arden Cinderella.** (See Class 139.)

Class 216.—*Red Poll Cows or Heifers.*

1523 **I. (£15.)**—Lt.-Col. Sir Merrik R. Burrell, Bt., C.B.E., Knepp Castle, Horsham, for **Sudbourne Minerva** 24372, born Nov. 20, 1913, calved Feb. 1, 1922, bred by Kenneth M. Clark, late of Sudbourne Hall, Orford; *s.* Acton Crowfoot 9987, *d.* Sudbourne Minnie 22850 *by* Sudbourne Royal 9979.

Class 217—*Ayrshire Cows or Heifers.*

1682 **I. (£15, & Champion.[2])**—Jacob S. Murray, for **Carston Cinderella 2nd.** (See Class 170A.)

1683 **II. (£10.)**—Thomas Simpson, Haynes, Bedford, for **Haynes Snowdrop,** born Sept. 10, 1916, calved March 5, 1922; *s.* Brae Rising Star 8187, *d.* West Newton Snowdrop 3rd 34495 *by* Balgreddan Bright Boy 6954.

1680 **III. (£5.)**—A. and A. Kirkpatrick, for **Barr Amelia.** (See Class 170A.)

H. C.—1673, 1674, 1676, 1684.

Class 218.—*British Friesian Cows or Heifers.*

1784 **I. (£15, & R. N. for Champion.[3])**—W. and R. Wallace, Knebworth, Herts, for **Inwood Garnet** 29230, born June 27, 1917, calved April 19, 1922, bred by Miss Guest, Inwood, Templecombe, Somerset; *s.* Inwood (imported) Ideal 4027, *d.* Gorstage Gauntlet 1492 *by* Garstage Grenadier 241.

1771 **II. (£10.)**—G. Holt-Thomas, North Dean House, Hughenden, Bucks, for **Kingswood Myrtle Leaf** 25230, born Nov. 11, 1916, calved March 3, 1922, bred by Horace Hale, Tormare, Findon, Worthing; *s.* Kingswood (imported) Ynte 4047, *d.* Kingswood Myrtle 9294 *by* Kingswood Prince 341.

1780 **III. (£5.)**—James Russel, Mapleton, Edenbridge for **Sparrowycke Desire** 26526, born Sept. 6, 1916, calved April 29, 1922, bred by Charles Mead, Sparrow Wycke, Purleigh, Essex; *s.* Marsh (imported) Generaal 4157, *d.* Sparrowycke Pride 19282 *by* Sparrowycke Alpha 2045.

H. C.—1760, 1781.

Class 219.—*Jersey Cows or Heifers.*

1898 **I. (£15, & R. N. for Champion.[2])**—S. G. Asher, Ascot Place, Ascot, for **Dainty** (Vol. 28) p. 239), whole colour, born Jan. 14, 1914, calved Jan. 21, 1922, bred by Mrs. Weston, Holme Grange, Wokingham, Berks; *s.* Victor 11187, *d.* Damson *by* Great Combine 10266.

1910 **II. (£10.)**—Mrs. Evelyn, Wotton House, Dorking, for **Fairlawne Hussy** (Vol. 30, p. 273), broken colour, born Aug. 8, 1916, calved Feb. 6, 1922, bred by W. M. Cazalet, Fairlawne, Tonbridge; *s.* Sir Toby 12154, *d.* Hussy 13th *by* MacDougal 9333.

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[1] Prizes given by the Devon Cattle Breeders' Society.

[2] Champion Prize of £20, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Ayrshire, Jersey and Guernsey Milk Yield Competitions.

[3] Champion Prize of £30, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Dairy Shorthorn, Lincolnshire Red Shorthorn, Devon, South Devon, Longhorn, Red Poll and British Friesian Milk Yield Competitions.

1927 **III.** (£5.)—MRS. RUDD, Felbridge Park Farm, East Grinstead, for **Fire King's Tidy** (Vol. 30, p. 97), whole colour, born May 2, 1918, calved Feb. 1, 1922; *s.* Fire King 12615, *d.* Jolly Tidy *by* Cyclone 3rd 11274.
H. C.—1899, 1901, 1902, 1903, 1911, 1912, 1913, 1932, 1933, 1939, 1958, 1959.

Class 220.—*Guernsey Cows or Heifers.*

2071 **I.** (£15.)—MRS. JERVOISE, Herriard Park, Basingstoke for **Herriard Sweet** 12841, fawn and white, born Nov. 8, 1917, calved March 14, 1922; *s.* Herriard du Foulon 3156, *d.* Naftiaux Sweet 11574 *by* Governor of the Chene 1297 P.S., R.G.A.S.
2070 **II.** (£10.)—MRS. JERVOISE, for **Froome's Lady Fascination 3rd** 11355, fawn and white, born May 10, 1915, calved April 14, 1922, bred by G. H. Froome, School Lane Farm, St. Martins, Guernsey; *s.* Governor of the Chene 1297 P.S., R.G.A.S., *d.* Fascination 2nd 4665 P.S., R.G.A.S.

Class 221.—*Kerry Cows or Heifers.*

2150 **I.** (£15, **& Champion.**[1])—CAPT. NELSON ZAMBRA and C. W. MILNE, for **Castle Lough Nina.** (See Class 199.)
2140 **II.** (£10, **& R. N. for Champion.**[1])—MISS P. DE B. BOWEN-COLTHURST, Layer Fields, Layer-de-la-Haye, Colchester, for **Castlelough Connie** (4126), born March 31, 1916, calved Feb. 14, 1922, bred by John Hilliard, Lake Hotel, Killarney; *s.* Castlelough Larry (765), *d.* Castlelough Cowslip 2nd (3813) *by* Duke 13th of Carton (737).
2148 **III.** (£5.)—BERTRAM W. A. WATNEY, Chaldon Mead, Caterham, Surrey, for **Countess 9th** (4166), born Feb. 21, 1916, calved May 21, 1922, bred by D. M. Rattray Gortnaskehy, Ballybunion; *s.* Gort Prince 2nd (718), *d.* Gort Countess 3rd (3440) *by* Gort Conn (545).
H. C.—2149.

Class 222.—*Dexter Cows or Heifers.*

2198 **I.** (£15.)—ALFRED C. KING, for **La Mancha Madeline.** (See Class 204.)
2199 **II.** (£10.)—G. L. M. LUTWYCHE, Forest House, Horsham, for **Grinstead Folly** 2633, born Nov. 26, 1918, calved June 15, 1922, bred by Lady Loder, Clock House, Cowfold, Sussex; *s.* Brokenhurst Spalpeen 558, *d.* Fillongley Folly 2333 *by* Oakridge Grandaddy 510.

Butter Tests.

Class 223a.—*Cows exceeding* 900 *lbs. live weight.*

1898 **I.** (£15, **& G. M.**[2])—S. G. ASHER, for **Dainty.** (See Class 219.)
1910 **II.** (£10.)—MRS. EVELYN, for **Fairlawne Hussy.** (See Class 219.)
1784 **III.** (£5.)—W. and R. WALLACE, for **Inwood Garnet.** (See Class 218.)
Certificates of Merit.[3]—1899, 1927.
H. C.—1053, 1060, 1129, 1330, 1333, 1373, 1374, 1682, 1760, 1764, 1781, 2071.

Class 223b.—*Cows not exceeding* 900 *lbs. live weight.*

1903 **I.** (£15, **& S. M.**[2])—GROSVENOR BERRY, Mount Bures, Bures, Suffolk, for **Postage 2nd** (Vol. 23, p. 425), nearly whole colour, born April 18, 1918, calved Jan. 23, 1922; *s.* Verdun 12789, *d.* Postage *by* Dinah's Bat 11669.
1926 **II.** (£10, **& B. B.**[2])—MRS. RUDD, Felbridge Park Farm, East Grinstead, for **Cygnus 3rd** (Vol. 30, p. 255), whole colour, born Sept. 21, 1916, calved Jan. 25, 1922, bred by H. Y. Thompson, Oving House, Aylesbury; *s.* Daystar 11280, *d.* Swansea *by* Swansdown 10791.
1959 **III.** (£5.)—R. BRUCE WARD, for **Piquant.** (See Class 187.)
Certificates of Merit.[3]—1901, 1902, 1940, 1957, 1958.
H. C.—1667.

GOATS.[4]

Class 224.—*Male Goats, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, over 2 years old.*

2262 **I.** (£3 **& R. N. for Champion.**[5])—MRS. MABEL GRACE, Silver Beach, East Cliff, Herne Bay, for **Herne Bay Premier** 1265, born Feb. 29, 1920; *s.* Herne Bay Chancellor 1188 *d.* Nash Magpie 997 *by* Woodlands Marauder 742.
2263 **II.** (£2.)—MISS K. PELLY, Theydon Place, Epping, for **Theydon Marconi** 1138, born Feb. 8, 1919; *s.* Sadberge Marcus Coriolanus 1003, *d.* Theydon Myrtle 909 *by* Sedgemere Georgius 689.

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[1] Champion Prize of £10, with £5 to the Reserve Number, given by a Society interested in the production of milk, for the Cows obtaining the highest number of points in the Kerry and Dexter Milk Yield Competitions.

[2] Gold Medal, Silver Medal, and Bronze Bowl given by the English Jersey Cattle Society for the three Jersey animals obtaining the greatest number of points in the Butter Tests.

[3] Certificates of Merit given by the English Jersey Cattle Society for Jersey Cows, not being Prize Winners, obtaining the following points: Cows five years old and upwards, 35 points; Cows under five years old, 30 points.

[4] £30 towards these Prizes were given by the British Goat Society.

[5] Challenge Certificate given by the British Goat Society for the best Male Goat.

2261 III. (£1.)—BRIG.-GEN. THE HON. W. E. CAVENDISH, The Farm House, Holkham, Norfolk for **Towcester Klito** 1140, born Aug. 3, 1919, bred by the Hon. Mrs. Pomeroy, Greens Norton Court, Towcester; *s.* Edenbreck Klito 946, *d.* Towcester Edna 948 *by* Wigmore Tato 704.

Class 225.—*Male Goats, any other variety, over 2 years old.*

2264 I. (£3.)—MRS. ARTHUR ABBEY, Didgemere Hall, Roydon, Essex, for **Grange Granite,** Anglo-Nubian-Swiss, born March 13, 1914, bred by M. E. Mitchell, Grange House, Levenshulme, Manchester; *s.* Wigmore Topaz 2040, *d.* Hawthorne Granite 2256 *by* Holly Lodge Blue Granite 229.

Class 226.—*Male Goats, any variety, above 1 year and not exceeding 2 years old.*

2265 I. (£3, & Champion.[1])—BARONESS BURTON, Dochfour, Inverness, for **Dochfour Onyx** 4665, Anglo-Nubian-Swiss, born March 16, 1921; *s.* Grange Granite 2369, *d.* Withdean Topsy 2662 *by* Champion Leazes Luck 1754.

2267 II. (£2.)—MRS. HOPE MAURICE, Buckhurst Farm, Mark Beech, Edenbridge, for **Ridgway Rama** 4713, British Alpine, born Feb. 23, 1921; *s.* Proud 2853, *d.* Tremedda Kypros, 2539 *by* Wigmore Topaz.

2269 III. (£1.)—MRS. M. J. RUTTER, Raydon, Mitcham, Surrey, for **Raydon Vim** 4790, Anglo-Nubian-Swiss, born March 25, 1921; *s.* Trunedda Sir Galahad 3139, *d.* Raydon Lotus 3871 *by* Leazes Lucky Halton 2575.

Class 227.—*Male Kids, any variety, not exceeding 1 year old.*

2271 I. (£3.)—MISS K. PELLY, Theydon Place, Epping, for **Nash Rufus** 1450, Anglo-Nubian, born Jan. 23, 1922, bred by Mrs. Horne, Nash Court, Westwell, Kent; *s.* Nash Bristles 1418, *d.* Nash Bella 1112 *by* Edenbreck Midas 740.

2272 II. (£2.)—MRS. GERALD SOAMES, Long Buckby Wharf, Rugby, for **Broxbourne March Monarch** 5230, British Alpine, born March 5, 1922, bred by H. E. Hughes, Broxbourne, Herts; *s.* Manor Faithful 464, *d.* Broxbourne Fairy May 3301 *by* Leazes Hackle 372.

2270 III. (£1.)—BARONESS BURTON, Dochfour, Inverness, for **Dochfour Michimoto,** British Saanen, born March 26, 1922; *s.* Dochfour Arrogance 3503, *d.* Leazes Pearl 2516 *by* Leazes Treasure 2247.

Class 228.—*Female Goats, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, over 2 years old.*

2274 I. (£3.)—MRS. MABEL GRACE, Silver Beach, East Cliff, Herne Bay, for **Herne Bay Honeysuckle** 1182, born Feb. 25, 1919, kidded May 24, 1922; *s.* Killerton Pink Pearl 988, *d.* Nash Magpie 997 *by* Woodlands Marauder 742.

2280 II. (£2.)—MISS K. PELLY, Theydon Place, Epping, for **Theydon Tilda** 1163, born March 22, 1919, kidded May 5, 1922; *s.* Sadberge Marcus Coriolanus 1003, *d.* Edenbreck Tilda 804 *by* Clifton Trout 651.

2273 III. (£1.)—MRS. MABEL GRACE, for **Brentmoor Bunty** 1032, born March 27, 1917, kidded May 13, 1922, bred by W. S. Horne, Nash Court, Westwell, Kent; *s.* Edenbreck Midas 740, *d.* Nash Magpie 997 *by* Woodlands Marauder 742.

2275 R. N.—MISS K. PELLY, for **Nash Baroness.**

Class 229.—*Female Goats, Swiss, Anglo-Swiss, Toggenburg, Anglo-Toggenburg or British Saanen, over 2 years old.*

2284 I. (£3, & Champion.[2])—MRS. HOPE MAURICE, Buckhurst Farm, Mark Beech, Edenbridge, for **Ridgway Rosalba** 3687, British Saanen, born March 29, 1919, kidded April 10, 1922; *s.* Proud 2853, *d.* Grange Glisten 2683 *by* Grange Grenadier.

2283 II. (£2.)—MISS CHAMBERLAIN, Westons, Lyndhurst, Hants, for **Welcome of Westons** 4513, British Saanen, born Jan. 10, 1920, kidded March 6, 1922; *s.* Proud 2853, *d.* Hilma 2nd 8 *by* Stockwell Grange 4566.

2281 III. (£1.)—MRS. ARTHUR ABBEY, Didgemere Hall, Roydon, Essex, for **Tremedda Lidia** 3555, Toggenburg, born March 15, 1919, kidded March 19, 1922, bred by Miss A. Groose; *s.* Copthorne Star 3120, *d.* Tremedda Lalage 2522 *by* Wigmore Topaz 2040.

2282 R. N.—BARONESS BURTON, Dochfour, Inverness, for **Leazes Pearl.**

H C.—2285.

Class 230.—*Female Goats, British Alpine, over 2 years old.*

2286 I. (£3, & R. N. for Champion.[2])—MRS. ARTHUR ABBEY, Didgemere Hall, Roydon, Essex, for **Didgemere Dulcie** 4233, born March 9, 1920, kidded April 13, 1922; *s.* Prophet of Bashley 3775, *d.* Withdean Countess 2855 *by* Leazes Lucky Halton 2575.

2289 II. (£2.)—MRS. GERALD SOAMES, Long Buckby Wharf, Rugby, for **Pytchley Clara** 3528, born Feb. 19, 1919, kidded April 14, 1922; *s.* Proud 2853, *d.* Mayfield Carmen 2538 *by* Cherub.

2287 III. (£1.)—MRS. ARTHUR ABBEY, for **Preference** 2779, born March 28, 1917, kidded March 27, 1922, bred by Miss Pope, New Milton, Hants; *s.* Leazes Lucky Halton 2575, *d.* Prejudice 2500 *by* Leazes Luck 1754.

2288 R. N.—MRS. ARTHUR ABBEY, for **Tremedda Lalage 2nd.**

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[1] Challenge Certificate given by the British Goat Society for the best Male Goat.

[2] Challenge Certificate given by the British Goat Society for the best Female Goat, over 2 years old, that has borne a kid.

Class 231.—*Female Goats, any other variety, over* 2 *years old, not eligible for Classes* 228 *to* 230.

2294 I. (£3.)—MRS. HOPE MAURICE, Buckhurst Farm, Mark Beech, Edenbridge, for **Spring Flower** 4342, Toggenburg, born May 16, 1920, kidded May 21, 1922, bred by Robert Green; *s.* Edenstead Pluck 3007, *d.* Mayfield June 2783 *by* Leazes Lucky Halton 2575.
2297 II. (£2.)—MRS. GERALD SOAMES, Long Buckby Wharf, Rugby, for **Pytchley Snowflake** 7340, Anglo-Nubian-Swiss, born Jan. 19, 1920, kidded April 18, 1922; *s.* Cotswold Onyx 2810, *d.* Pytchley Ladybell *by* Pytchley Bellboy 3933.
2292 III. (£1.)—MRS. LOUISA HINES, Watley, Twyford, near Winchester, for **Beechmead Edith** 4364, Anglo-Nubian-Swiss, born Feb. 17 1920, kidded May 7, 1922; *s.* Edenstead Pluck 3007, *d.* Ira Patchy 3383 *by* Broxbourne White Nugget 1909.
2293 R. N.—H. E. JEFFERY, Trenance, Diss, Norfolk, for **Arlette.**

Class 232.—*Goatlings, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, above* 1 *year and not exceeding* 2 *years old.*

2299 I. (£3.)—MISS K. PELLY, Theydon Place, Epping, for **Theydon Tangerina** 1362, born Feb. 21, 1921; *s.* Dunwich Beau 1274, *d.* Theydon Treasure 1191 *by* Sadberge Marcus Coriolanus 103.
2298 II. (£2.)—MRS. MABEL GRACE, Silver Beech, East Cliff, Herne Bay, for **Herne Bay Dejah Thoris** 8430, born Jan. 1, 1921; *s.* Ruritania Hawthorne 1059, *d.* Nash Magpie 997 *by* Woodlands Marauder 742.

Class 233.—*Goatlings, any other variety, above* 1 *year and not exceeding* 2 *years old, not eligible for Class* 232.

2309 I. (£3.)—MISS E. M. POPE, Bashley Lodge, New Milton, Hants, for **Cintra Pepita** 4828, British Saanen, born Feb. 7, 1921, bred by Mr. Payne, Cintra, Mallingley Green; *s.* Prophet of Bashley 3775, *d.* Prudent of Bashley.
2303 II. (£2.)—MISS C. CHAMBERLAIN, Westons, Lyndhurst, Hants, for **Welfare of Westons** 4640, born Jan. 20, 1921, British Saanen; *s.* Proud 2853, *d.* Helma 2nd 8 *by* Stockwell Grange 4516.
2300 III. (£1.)—MRS. ARTHUR ABBEY, Didgemere Hall, Roydon, Essex, for **Didgemere Dancer** 5074, Anglo-Nubian-Swiss, born March 12, 1921; *s.* Prophet of Bashley 3775, *d.* Withdean Countess 2855 *by* Leazes Lucky Halton 2575.
2308 R. N.—MRS. HOPE MAURICE, for **Ridgeway Roxana.**
H. C.—2301, 2302, 2304. C.—2307.

Class 234.—*Female Kids, Anglo-Nubian, entered or eligible for entry in the Anglo-Nubian section of the Herd Book, not exceeding* 1 *year old.*

2312 I. (£3.)—MISS K. PELLY, Theydon Place, Epping, for **Theydon Brigette** 1437, born Jan. 2, 1922; *s.* Theydon Angus 1136, *d.* Nash Baroness 1242 *by* Edenbreck Danaus 843.
2311 I. (£2.)—MISS K. PELLY, for **Theydon Babette** 1436, born Jan. 2, 1922; *s.* Theydon Angus 1136, *d.* Nash Baroness 1242 *by* Edenbreck Danaus 843.
2310 III. (£1.)—MISS K. PELLY, for **Theydon Almond** 1444, born Feb. 26, 1922; *s.* Edenbreck Klito 947, *d.* Regius Aganippe 895 *by* Wigmore Norman 562.

Class 235.—*Female Kids, any other variety, not exceeding* 1 *year old, not eligible for Class* 234.

2319 I. (£3.)—MISS E. M. POPE, Bashley Lodge, New Milton, Hants, for **Puzzle of Bashley** 5224, Anglo-Nubian-Swiss, born March 2, 1922; *s.* Herne Bay Thark 4916, *d.* Problem of Bashley 3076 *by* Proud 2853.
2314 II. (£2.)—MRS. ARTHUR ABBEY, Didgemere Hall, Roydon, Essex, for **Didgemere Dianthus,** Anglo-Nubian-Swiss, born Jan. 25, 1922; *s.* Prophet of Bashley 3775, *d.* Didgemere Dahlia 4597 *by* Tremedda Perceval 3136.
2318 III. (£1.)—MISS E. M. POPE, for **Ping Pong of Bashley** 5219, British Alpine, born Feb. 21, 1922; *s.* Herne Bay Thark 4916, *d.* Pastime of Bashley 4674 *by* Wilful of Westons 4673.
2316 R. N.—MISS C. CHAMBERLAIN, Westons, Lyndhurst, Hants, for **Wit of Westons.**
H. C.—2317. C.—2315.

Milk Yield Prizes.

Class 236.—*Open to animals entered in Classes* 228–231 *that have won before May* 1, 1922, *a First, Second or Third Prize in any Milking Competition.*

2282 I. (£3.)—BARONESS BURTON, Dochfour, Inverness, for **Leazes Pearl** 2516, British Saanen, born May 1, 1915, kidded March 26, 1922, bred by Mrs. J. C. Straker, Stagshaw, Northumberland; *s.* Leazes Treasure 2247, *d.* Leazes Lady Fortune 2173 *by* Broxbourne Adveral 1947.
2287 II. (£2.)—MRS. ARTHUR ABBEY, for **Preference.** (See Class 230.)
2273 III. (£1.)—MRS. MABEL GRACE, for **Brentmoor Bunty.** (See Class 228.)

Class 237.—*Open to animals entered in Classes* 228–231, *not eligible for Class* 236.

2281 **I. (£3, Champion,[1] & Champion.[2])**—Mrs. Arthur Abbey, for **Tremedda Lidia.** (See Class 229.)
2286 **II. (£2, R. N. for Champion,[1] & R. N. for Champion.[2])**—Mrs. Arthur Abbey, for **Didgemere Dulcie.** (See Class 230.)
2284 **III. (£1.)**—Mrs. Hope Maurice, for **Ridgway Rosalba.** (See Class 229.)
2292 **R. N.**—Mrs. Louisa Hines, for **Beechmead Edith.**
2274 **Champion.[3]**—Mrs. Mabel Grace, for **Herne Bay Honeysuckle.** (See Class 228.)
2280 **R. N. for Champion.[3]**—Miss K. Pelly, for **Theydon Tilda.** (See Class 228.)
H. C.—2274, 2283, 2288, 2291, 2294.

SHEEP.

Oxford Downs.

Class 238.—*Oxford Down Shearling Rams.*

2328 **I. (£10, & R. N. for Champion [4]), 2329 II. (£5),** and 2331 **R. N.**—Hugh W. Stilgoe, The Grounds, Adderbury, Banbury.
2327 **III. (£3.)**—Frederick Penson, Taston, Charlbury, Oxon.
H.C.—2330, 2332.

Class 239.—*Oxford Down Ram Lambs.*[5]

2335 **I. (£10),** & 2336 **III. (£3.)**—Henry Akers & Co., Moat House, Black Bourton, Clanfield, Oxon.
2344 **II. (£5.)**—Hugh W. Stilgoe, The Grounds, Adderbury, Banbury.
2343 **R. N.**—Frederick Penson, Taston, Charlbury, Oxon.
H. C.—2339, 2340.

Class 240.—*Three Oxford Down Ram Lambs.*

2345 **I. (£10.)**—Henry Akers & Co., Moat House, Black Bourton, Clanfield, Oxon.
2351 **II. (£5.)**—Joseph Johnston, Ham Court, Bampton, Oxon.
2349 **III. (£3.)**—R. W. Hobbs & Sons, Kelmscott, Lechlade, Glos.
2352 **R. N.**—Frederick Penson, Taston, Charlbury, Oxon.
H. C.—2347.

Class 241.—*Three Oxford Down Shearling Ewes.*

2357 **I (£10, & Champion.[4])**—Frederick Penson, Taston, Charlbury, Oxon.
2355 **II. (£5)**—Joseph Johnston, Ham Court, Bampton, Oxon.
2359 **III.(£3.)**—Hugh W. Stilgoe, The Grounds, Adderbury, Banbury.
2356 **R. N.**—Albert E. Marlow, Preston Deanery Hall, Northampton.
H. C.—2360.

Class 242.—*Three Oxford Down Ewe Lambs.*

2361 **I. (£10.)**—Henry Akers & Co., Moat House, Black Bourton, Clanfield, Oxon.
2365 **II. (£5.)**—R W. Hobbs & Sons, Kelmscott, Lechlade, Glos.
2366 **III. (£3.)**—Joseph Johnston, Ham Court, Bampton, Oxon.
2364 **R. N.**—W. R. Gantlett & Son, Manor Farm, Fairford, Glos.

Shropshires.

Class 243.—*Shropshire Two Shear Rams.*[6]

2370 **I. (£10, & R. N. for Champion.[7])**—F. and F. B. Bibby, Hardwicke Grange, Shrewsbury.
2375 **II (£5.)**—William Everall, Shrawardine Castle, Shrewsbury.
2372 **R. N.**—James Joseph Brewin, Llysmeirchion, Trefnant, North Wales.
H. C.—2374.

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[1] The "Dewar" Challenge Trophy, given through the British Goat Society for the Goat entered in either the General or the Toggenburg section of the Society's Herd Book winning the highest number of points in the Milking Classes.

[2] The "Pomeroy" Challenge Cup, given through the British Goat Society for the best Anglo-Nubian entered in the Anglo-Nubian section of the Society's Herd Book winning the highest number of points in the Milking Classes. A Special Prize of £1 1*s.* was given to the winner of the Cup.

[3] Challenge Certificate, given by the British Goat Society for the best dual purpose Goat.

[4] The "Heythrop" Silver Challenge Cup, value £75, given through the Oxford Down Sheep Breeders' Association for the best exhibit of Oxford Down Sheep in Classes 238–242.

[5] Prizes given by the Oxford Down Sheep Breeders' Association.

[6] Prizes given by the Shropshire Sheep Breeders' Association.

[7] Champion Silver Medal given by the Shropshire Sheep Breeders' Association for the best Ram in Classes 243 and 244.

Class 244.—*Shropshire Shearling Rams.*

2384 I. (£10, & Champion.[1])—JAMES JOSEPH BREWIN, Llysmeirchion, Trefnant.
2383 II. (£5.)—RICHARD E. BIRCH, Maes Elwy, St. Asaph.
2392 III. (£3.)—E CRAIG TANNER, Eyton-on-Severn, Shrewsbury.
2386 R. N.—H. A. BROWN, Croft House, Grendon, Atherstone.
H. C.—2387. C.—2382, 2388, 2389.

Class 245.—*Three Shropshire Shearling Rams.*

2397 I. (£10, & Champion.[2])—JAMES JOSEPH BREWIN, Llysmeirchion, Trefnant.
2402 II. (£5.)—E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury.
2398 III (£3.)—H A. BROWN, Croft House, Grendon, Atherstone, for rams, bred by the Duke of Westminster, Eaton Hall, Chester.
2396 R. N.—RICHARD E. BIRCH, Maes Elwy, St. Asaph.
H. C.—2399.

Class 246.—*Three Shropshire Ram Lambs.*[3]

2407 I. (£10.)—KENNETH W. MILNES, The Field, Hereford.
2403 II. (£5.)—RICHARD E. BIRCH, Maes Elwy, St. Asaph.
2404 R. N.—JAMES JOSEPH BREWIN, Llysmeirchion, Trefnant.
H. C.—2405.

Class 247.—*Three Shropshire Shearling Ewes.*

2415 I. (£10, & R. N. for Champion.[2])—JAMES JOSEPH BREWIN, Llysmeirchion, Trefnant.
2418 II. (£5.)—MRS. W. F. INGE, Thorpe Hall, Tamworth.
2423 III. (£3.)—E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury.
2414 R. N.—RICHARD E. BIRCH, Maes Elwy, St. Asaph.
H. C.—2416. C.—2412.

Class 248.—*Three Shropshire Ewe Lambs.*

2431 I. (£10.)—E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury.
2425 II. (£5.)—H. A. BROWN, Croft House, Grendon, Atherstone.
2428 III. (£3.)—KENNETH W. MILNES, The Field, Hereford.
2426 R. N.—WILLIAM EVERALL, Shrawardine Castle, Shrewsbury.
H. C.—2424. C.—2427.

Southdowns.

Class 249.—*Southdown Two Shear Rams.*[4]

2434 I. (£10, & Champion.[5])—SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey.
2437 II. (£5.)—LADY FITZGERALD, Buckland, Faringdon, Berks.
2432 III. (£3.)—HIS MAJESTY THE KING, Sandringham, Norfolk.
2439 R. N.—LADY LUDLOW, Luton Hoo, Luton, Beds.
H.C.—2435. C. 2440.

Class 250.—*Southdown Shearling Rams.*

2447 I. (£10, & R. N. for Champion.[5])—LADY FITZGERALD, Buckland, Faringdon, Berks.
2443 II. (£5.) & 2442 III. (£3.)—HIS MAJESTY THE KING, Sandringham, Norfolk.
2448 R. N.—R. S. HICKS, Wilbraham Temple, Cambs.
H. C.—2449. C.—2446.

Class 251.—*Three Southdown Shearling Rams.*[4]

2453 I. (£10.)—HIS MAJESTY THE KING, Sandringham, Norfolk.
2455 II. (£5.)—LADY FITZGERALD, Buckland, Faringdon, Berks.
2454 III. (£3.)—SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey.
2456 R. N.—R. S. HICKS, Wilbraham Temple, Cambs.
H. C.—2458. C.—2459.

Class 252.—*Three Southdown Ram Lambs.*

2460 I. (£10.)—HIS MAJESTY THE KING, Sandringham, Norfolk.
2465 II. (£5.)—LADY FITZGERALD, Buckland, Faringdon, Berks.
2463 III. (£3.)—SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey.
2468 R. N.—LADY LUDLOW, Luton Hoo, Luton, Beds.
H. C.—2464. C.—2462, 2467.

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[1] Champion Silver Medal given by the Shropshire Sheep Breeders' Association for the best Ram in Classes 243 and 244.

[2] The "Eaton" Silver Challenge Cup, value Fifty Guineas, given through the Shropshire Sheep Breeders' Association for the best exhibit of Shropshire Sheep in Classes 243–248.

[3] Prizes given by the Shropshire Sheep Breeders' Association.

[4] Prizes given by the Southdown Sheep Society.

[5] Champion Gold Medal, value £10 10s. given by the Southdown Sheep Society for the best Ram in Classes 249 and 250.

Class 253.—*Three Southdown Shearling Ewes.*

2471 **I. (£10, & Champion.[1])**—His Majesty The King, Sandringham, Norfolk.
2479 **II. (£5, & R. N. for Champion.[1])**—Lady Ludlow, Luton Hoo, Luton, Beds.
2473 **III. (£3.)**—Sir Jeremiah Colman, Bt., Gatton Park, Surrey.
2477 **R. N.**—R. S. Hicks, Wilbraham Temple, Cambs.
H. C.—2478. **C.**—2472, 2480.

Class 254.—*Three Southdown Ewe Lambs.*

2486 **I. (£10.)**—Lady Fitzgerald, Buckland, Faringdon, Berks.
2484 **II. (£5.)**—Sir Jeremiah Colman, Bt., Gatton Park, Surrey.
2481 **III. (£3.)**—His Majesty The King, Sandringham, Norfolk.
2483 **R. N.**—The Rev. C. H. Brocklebank, Bartlow House, Cambridge.
H. C.—2489. **C.**—2485, 2487.

Hampshire Downs.

Class 255.—*Hampshire Down Shearling Rams.*

2494 **I. (£10.)**—James Goldsmith, Blendworth, Horndean, Hants., for ram, bred by Mrs. Jervoise, Herriard Park, Basingstoke.
2495 **II. (£5.)**—Mrs. Jervoise, Herriard Park, Basingstoke.
2493 **III. (£3.)** & 2492 **R. N.**—H. W. Bishop and J. W. Measures, Pendley Stock Farms, Tring, Herts.
H. C.—2498.

Class 256.—*Hampshire Down Ram Lambs.*[2]

2501 **I. (£10, & R. N. for Champion.[3])**—H. W. Bishop and J. W. Measures, Pendley Stock Farms, Tring, Herts.
2507 **II. (£5.)** & 2508 **R. N.**—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading.
2510 **III. (£4.)**—Lt.-Col. George Philippi, M.C., Crawley Court, near Winchester.
2513 **IV. (£2.)**—The Trustees of the Lord Wandsworth Agricultural College, Long Sutton, Basingstoke.
H. C.—2504, 2509. **C.**—2503, 2506.

Class 257.—*Three Hampshire Down Ram Lambs.*

2522 **I. (£10, & Champion.[3])**—V. T. Thompson, Norton Manor, Sutton Scotney, Hants.
2520 **II. (£5.)**—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading.
2519 **III. (£3.)**—Mrs. Jervoise, Herriard Park, Basingstoke.
2516 **R. N.**—H. W. Bishop and J. W. Measures, Pendley Stock Farms, Tring, Herts.
H. C.—2517, 2518, 2523. **C.**—2525.

Class 258.—*Three Hampshire Down Shearling Ewes.*

2528 **I. (£10)**, & 2529 **II. (£5.)**—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading.
2530 **III. (£3.)**—James White, Foxhill Estate, Swindon.
2526 **R. N.**—H. W. Bishop and J. W. Measures, Pendley Stock Farms, Tring, Herts.
H. C.—2527.

Class 259.—*Three Hampshire Down Ewe Lambs.*

2531 **I. (£10.)**—H. W. Bishop and J. W. Measures, Pendley Stock Farms, Tring, Herts.
2537 **II. (£5.)**—V. T. Thompson, Norton Manor, Sutton Scotney, Hants.
2535 **III. (£3.)**—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading.
2536 **R. N.**—Lt.-Col. George Philippi, M.C., Crawley Court, near Winchester.
H. C.—2533, 2534, 2538. **C.**—2532, 2539.

Suffolks.[4]

Class 260.—*Suffolk Two Shear Rams.*

2544 **I. (£10.)**—W. F. Paul, Kirton Lodge, Ipswich, for **Grange Victor** 16297, bred by H. E. Smith, Walton, Ipswich.
2546 **II. (£5.)**—Frederick M. L. Slater, Weston Colville, Cambs, for **Colville Improver** 16381.
2543 **R. N.**—Chivers & Sons, Ltd., Histon, Cambridge, for **Histon Grange.**

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[1] Champion Silver Medal given by the Southdown Sheep Society for the best Pen of Ewes or Ewe Lambs in Classes 253 and 254

[2] Prizes given by the Hampshire Down Sheep Breeders' Association.

[3] Champion Prize of £10 given by the Hampshire Down Sheep Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 256, 257 and 259.

[4] £42 towards these Prizes were given by the Suffolk Sheep Society; and £23 through the Cambridge Local Committee by the Suffolk Agricultural Association.

Class 261.—*Suffolk Shearling Rams.*

2554 **I.** (£10.)—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge, for **Trumpington Drummer 16620.**
2558 **II.** (£7.)—S. R. Sherwood, Playford, Ipswich, for **Playford Consul 16590.**
2547 **III.** (£4.)—C. R. W. Adeane, C.B., Babraham Hall, Cambridge, for ram bred by F. B. Barling & Son, Newmarket.
2549 **R. N.**—Robert L. Barclay, C.B.E., Higham, Bury St. Edmunds.
H. C.—2556. **C.**—2552, 2559.

Class 262.—*Suffolk Ram Lambs.*

2580 **I.** (£10.)—Lindsay Lane, Moulton Hall, Newmarket.
2570 **II.** (£7.)—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge.
2575 **III.** (£5.)—D. Abbott Green, East Donyland Hall, Colchester.
2564 **IV.** (£4.)—F. B. Barling & Son, Amberley, Newmarket.
2581 **V.** (£3.)—W. F. Paul, Kirton Lodge, Ipswich.
2572 **R. N.**—Edward Giles, Sladburys Farm, Great Clacton, Clacton-on-Sea.
H. C.—2574. **C.**—2576, 2579.

Class 263.—*Three Suffolk Ram Lambs.*

2600 **I.** (£10.)—S. R. Sherwood, Playford, Ipswich.
2594 **II.** (£7.)—D. Abbott Green, East Donyland Hall, Colchester.
2595 **III.** (£5.)—W. C. Jackson, Fowlmere, Cambs.
2591 **IV.** (£3.)—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge.
2598 **R. N.**—W. F. Paul, Kirton Lodge, Ipswich.
H. C.—2593. **C.**—2587, 2588, 2592.

Class 264.—*Three Suffolk Shearling Ewes.*

2612 **I.** (£10.)—W. F. Paul, Kirton Lodge, Ipswich.
2602 **II.** (£7.)—Robert L. Barclay, C.B.E., Higham, Bury St. Edmunds.
2607 **III.** (£5.)—Chivers & Sons, Ltd., Histon, Cambridge.
2609 **R. N.**—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge.
H. C.—2606. **C.**—2605.

Class 265.—*Three Suffolk Ewe Lambs.*

2620 **I.** (£10.)—G. R. C. Foster, Anstey Hall, Trumpington, Cambridge.
2626 **II.** (£7.)—John R. Keeble, Brantham Hall, Manningtree, Essex.
2621 **III.** (£5.)—Edwin Giles, Sladburys Farm, Gt. Clacton, Clacton-on-Sea.
2627 **IV.** (£3.)—W. F. Paul, Kirton Lodge, Ipswich.
2618 **R. N.**—Chivers & Sons, Ltd., Histon, Cambridge.
H. C.—2623, 2624. **C.**—2625.

Dorset Downs.

Class 266.—*Dorset Down Shearling Rams.*

2634 **I.** (£10), & 2635 **R. N.**—P. & C. Seward, Weston, Petersfield, Hants.
2633 **II.** (£5.)—Hooper Brothers, Newburgh Farm, Winfrith, Dorset.

Class 267.—*Three Dorset Down Shearling Ewes.*

2639 **I.** (£10.)—Hooper Brothers, Newburgh Farm, Winfrith, Dorset.
2643 **II.** (£5.)—Robert N. Tory, Anderson, Blandford.
2642 **R. N.**—Thomas R. Spiller, Luccombe Farm, Milton Abbas, Blandford.

Class 268.—*Three Dorset Down Ram Lambs.*[1]

2647 **I.** (£10.)—Thomas R. Spiller, Luccombe Farm, Milton Abbas, Blandford.
2648 **II.** (£5.)—Robert N. Tory, Anderson, Blandford.
2646 **R. N.**—P. and C. Seward, Weston, Petersfield, Hants.

Dorset Horns.

Class 269.—*Dorset Horn Shearling Rams, born on or after November* 1, 1920.

2650 **I.** (£10), & 2649 **II.** (£5.)—Frank J. Merson & Son, Farringdon, North Petherton, Bridgwater.

Class 270.—*Three Dorset Horn Ram Lambs, born on or after November* 1, 1921.

2651 **I.** (£10.)—G. A. and R. A. Kingswell, Wellow Farm, Yarmouth, Isle of Wight.
2652 **II.** (£5.)—Charles Morris, Highfield, St. Albans and Bishop's Lydeard, Taunton.

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[1] Prizes given by the Dorset Down Sheep Breeders' Association.

Class 271.—*Three Dorset Horn Shearling Ewes, born on or after November* 1, 1920.

2654 **I. (£10.)**—Charles Morris, Highfield, St. Albans and Bishop's Lydeard, Taunton.
2653 **II. (£5.)**—Frank J. Merson & Son, Farringdon, North Petherton, Bridgwater.

Class 272.—*Three Dorset Horn Ewe Lambs, born on or after November* 1, 1921.[1]

2655 **I. (£10, & Champion.[2])**—Alfred Johnson, The Manor Farm, Symondsbury, Bridport, Dorset.
2656 **II. (£5, & R. N. for Champion.[2])**—G. A. and R. A. Kingswell, Wellow Farm, Yarmouth, Isle of Wight.
2658 **III. (£3.)**—Charles Morris, Highfield, St. Albans and Bishop's Lydeard, Taunton.
2657 **R. N.**—Frank J. Merson & Son, Farringdon, North Petherton, Bridgwater.

Ryelands.

Class 273.—*Ryeland Rams, Two Shear and upwards.*[3]

2667 **I. (£10.)**—J. R. Norman Waters, Fawke Farm, Sevenoaks, for **Clytha Gallant Duke** 826, born in 1918, bred by C. C. Jacobs, Tidmarsh, Reading.
2661 **II. (£5.)**—Edward Jones, Penybont Farm, Sennybridge, Breconshire, for **Penybont** 1088, born in 1920.
2664 **III. (£3.)**—John Q. Rowett, Ely Place, Frant, Sussex, for **Ely Standard,** born in 1920.
2663 **R. N.**—John Q. Rowett, for **Ely Acme.**
H. C.—2666. **C.**—2660, 2662, 2665.

Class 274.—*Ryeland Shearling Rams.*

2671 **I. (£10.)**—E. W. Langford, Ltd., Wye Stores, Hereford.
2673 **II. (£5.)**—T. L. Martin, Ashe Warren House, Overton, Hants, for **Ashe Monarch.**
2680 **III. (£3.)**—J. R. Norman Waters, Fawke Farm, Sevenoaks, for **Fawke Commander.**
2676 **R. N.**—David J. Thomas, Talachddu, Brecon, for **Talachddu Defender.**
H. C.—2670. **C.**—2669, 2674, 2675, 2677, 2679.

Class 275.—*Three Ryeland Ram Lambs.*

2684 **I. (£10.)**—T. L. Martin, Ashe Warren House, Overton, Hants.
2686 **II. (£5.)**—J. R. Norman Waters, Fawke Farm, Sevenoaks.
2683 **III. (£3.)**—W. E. Langford, Ltd., Wye Stores, Hereford.
2685 **R. N.**—John Q. Rowett, Ely Place, Frant, Sussex.
H. C.—2682.

Class 276.—*Three Ryeland Shearling Ewes.*

2688 **I. (£10, & Champion.[4])**—E. W. Langford, Ltd., Wye Stores, Hereford.
2689 **II. (£5.)**—T. L. Martin, Ashe Warren House, Overton, Hants.
2690 **III. (£3.)**—John Q. Rowett, Ely Place, Frant, Sussex.
2687 **R. N.**—R. R. Gribble, Gabriels Manor, Edenbridge, Kent.
H. C.—2691, 2692.

Class 277.—*Three Ryeland Ewe Lambs.*

2697 **I. (£10, & R. N. for Champion.[4])**—John Q. Rowett, Ely Place, Frant, Sussex.
2696 **II. (£5.)**—T. L. Martin, Ash Warren House, Overton, Hants.
2695 **III. (£3.)**—E. W. Langford, Ltd., Wye Stores, Hereford.
2694 **R. N.**—R. R. Gribble, Gabriels Manor, Edenbridge, Kent.
H. C.—2698.

Kerry Hill (Wales).

Class 278.—*Kerry Hill (Wales) Rams, Two Shear and upwards.*[5]

2703 **I. (£10.)**—The Duke of Westminster, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Eaton Knight** 6234, born in 1919.
2699 **II. (£5.)**—John Anwyl, Preston Hall Farm, Preston Brockhurst, Shrewsbury, for **Brockhurst Champion,** born in 1920.
2702 **III. (£3.)**—The Earl of Powis, Powis Castle, Welshpool, for **Goitre Justice 6899,** bred by W. R. Corfield, Goitre, Mont.
2701 **R. N.**—Robert E. Parker, Easton, Norwich, for **Eastern Orpheus.**

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[1] Prizes given by the Dorset Horn Sheep Breeders' Association.

[2] Champion Silver Medal given by the Dorset Horn Sheep Breeders' Association for the best exhibit of Dorset Horn Sheep in Classes 269–272.

[3] Prizes given by the Ryeland Flock Book Society.

[4] Silver Challenge Cup, given through the Ryeland Flock Book Society for the best exhibit of Ryeland Sheep in Classes 273–277.

[5] Prizes given by the Kerry Hill (Wales) Flock Book Society.

Class 279.—*Kerry Hill (Wales) Shearling Rams.*

2714 **I. (£10.)**—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Eaton Monitor.**
2707 **II. (£5.)**—LT.-COL. DAVID DAVIES, M.P., Broneirion, Llandinam, Mont., for **Gwernygoe Bumper.**
2713 **III. (£3.)**—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., for **Eaton Mimic.**
2705 **R. N.**—LT.-COL. DAVID DAVIES, M.P., for **Dinam Officer.**

Class 280.—*Kerry Hill (Wales) Ram Lambs.*

2722 **I. (£10.)**—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester, for **Eaton Nonsuch.**
2715 **II. (£5.)**—W. H. LESLIE, Bryntanat, Llansaintffraid, Mont.
2723 **III. (£3.)**—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., for **Eaton Nimrod.**
2718 **R. N.**—ROBERT E. PARKER, Easton, Norwich, for **Eastern Redshank.**

Class 281.—*Three Kerry Hill (Wales) Shearling Ewes.*

2731 **I. (£10.)**—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.
2726 **II. (£5**—W. H. LESLIE, Bryntanat, Llansaintffraid, Mont.
2724 **III. (£3.)**—LT.-COL. DAVID DAVIES, M.P., Broneirion, Llandinam, Mont.

Lincolns.

Class 282.—*Lincoln Two Shear Rams.*[1]

2737 **I. (£10, & Champion [2]), & 2738 R. N.**—MAJOR W. H. RAWNSLEY and C. W. TINDALL, Well Vale, Alford, and Park House, Louth, Lincs.
2733 **II. (£5.)**—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber, for **Horkstow Manor No. 22.**
2735 **III. (£3.)**—CLIFFORD NICHOLSON, for **Yorkshire Champion.**
H.C.—2732.

Class 283.—*Lincoln Shearling Rams.*

2752 **I. (£10, & R. N. for Champion.[2])**—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.
2748 **II. (£5.)**—CHARLES E. HOWARD, Nocton Rise, near Lincoln.
2746 **III. (£3.)**—ROBERT FISHER, Leconfield, Beverley.
2753 **R. N.**—MAJOR W. H. RAWNSLEY and C. W. TINDALL, Well Vale, Alford, and Park House, Louth.
H. C.—2740. **C.**—2745.

Class 284.—*Five Lincoln Shearling Rams.*[1]

2761 **I. (£15.)**—ROBERT FISHER, Leconfield, Beverley.
2762 **II. (£10.)**—CHARLES E. HOWARD, Nocton Rise, near Lincoln.
2764 **III. (£5.)**—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.
2759 **IV. (£2.)**—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
2756 **R. N.**—JOSEPH BROCKLEBANK, Carleton-le-Moorland, Newark.
H. C.—2757.

Class 285.—*Three Lincoln Ram Lambs.*

2774 **I. (£10.)**—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.
2770 **II. (£5), & 2769 III. (£3.)**—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
2773 **R. N.**—E. D. NEWMAN, Scremby Manor, Spilsby.
H. C.—2767.

Class 286.—*Three Lincoln Shearling Ewes.*

2777 **I. (£10.)**—CHARLES E. HOWARD, Nocton Rise, near Lincoln.
2776 **II. (£5.)**—ROBERT FISHER, Leconfield, Beverley.
2782 **III. (£3.)**—MAJOR W. H. RAWNSLEY and C. W. TINDALL, Well Vale, Alford, and Park House, Louth, Lincs.
2779 **R. N.**—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.

Class 287.—*Three Lincoln Ewe Lambs.*

2785 **I. (£10.)**—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
2788 **II. (£5.)**—CLIFFORD NICHOLSON, Horkstow Manor, Barton-on-Humber.
2783 **III. (£3.)**—THOMAS CAMPION, East Heslerton, York.
H. C.—2789. **C.**—2786, 2877.

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[1] Prizes given by the Lincoln Long-Wool Sheep Breeders' Association.

[2] Champion Prize of £5 given by the Lincoln Long-Wool Sheep Breeders' Association for the best Ram in Classes 282 and 283.

Leicesters.[1]

Class 288.—*Leicester Shearling Rams.*

2794 **I. (£10, & Champion [2]), & 2795 II. (£5, & R. N. for Champion.[2])**—WILLIAM JORDAN, Eastburn, Driffield, for rams bred by the Exors. of the late E. F. Jordan.
2791 **III. (£3.)**—GEORGE HARRISON, Gainford Hall, Darlington.
2798 **R. N.**—R. MEGGINSON, Garton Field, Driffield.
H. C.—2790, 2792, 2797, 2799.

Class 289.—*Leicester Ram Lambs.*

2802 **I. (£10.)**—GEORGE HARRISON, Gainford Hall, Darlington.
2806 **II. (£5), & 2805 III. (£3.)**—R. MEGGINSON, Garton Field, Driffield.
H. C.—2803, 2807.

Class 290.—*Leicester Shearling Ewes.*

2810 **I. (£10), & 2811 II. (£5.)**—WILLIAM JORDAN, Eastburn, Driffield, for ewes, bred by the Exors. of the late E. F. Jordan.
2813 **III. (£3.)**—R MEGGINSON, Garton Field, Driffield.
2816 **R. N.**—C. H. SIMPSON & SONS, Castle House, Hunmanby, Yorks.
H. C.—2809, 2814.

Class 291.—*Leicester Ewe Lambs.*

2819 **I. (£10), 2820 II. (£5), & 2821 III. (£3)**—GEORGE HARRISON, Gainford Hall, Darlington.
2822 **R. N.**—C. H. SIMPSON & SONS, Castle House, Hunmanby, Yorks.
H. C.—2817.

Border Leicesters.

Class 292.—*Border Leicester Rams, Two Shear and upwards.*

2826 **I. (£10.)**—R. G. MURRAY & SON, Spittal, Biggar, for **Unanimous,** born in 1920, bred by T. and M. Templeton, Sandyknowe, Kelso.
2829 **II. (£5.)**—WILLIAM R. ROSS, Culloden, Inverness, for **Creageasie Leader** 5369, born in 1919, bred by James Findlay, Newmiln of Creageasie, Forfar.
2830 **III. (£3.)**—W. and I. SLACK, Newby Demesne, Wetheral, Carlisle, for ram born in 1918, bred by W. R. Ross, Culloden.
2823 **R. N.**—THE EARL OF BALFOUR, K.G., Whittingehame, Prestonkirk, for **Viking 2nd.**

Class 293.—*Border Leicester Shearling Rams.*

2840 **I. (£10, & Champion.[3])**—WILLIAM R. ROSS, Culloden, Inverness.
2835 **II. (£5.)**—ANDREW M. MONTGOMERY, Nether Hall, Castle Douglas.
2836 **III. (£3.)**—R. G. MURRAY & SON, Spittal, Biggar.
2831 **R. N.**—THE EARL OF BALFOUR, K.G., Whittingehame, Prestonkirk.
H. C.—2839.

Class 294.—*Border Leicester Ewes, Two Shear and Upwards, with lambs at foot.*[4]

2842 **I. (£10.)**—THE EARL OF BALFOUR, K.G., Whittingehame, Prestonkirk, for ewe, born in 1918.
2845 **II. (£5.)**—WILLIAM R. ROSS, Culloden, Inverness, for ewe born in 1919.

Class 295.—*Border Leicester Shearling Ewes.*

2847 **I. (£10, & R. N. for Champion.[3])**—THE EARL OF BALFOUR, K.G., Whittingehame, Prestonkirk.
2851 **II. (£5.)**—R. G. MURRAY & SON, Spittal, Biggar.
2852 **III. (£3.)**—WILLIAM R. ROSS, Culloden, Inverness.
2849 **R. N.**—ANDREW M. MONTGOMERY, Nether Hall, Castle Douglas.

Wensleydales.

Class 296.—*Wensleydale Rams, Two Shear and upwards.*

2855 **I. (£10.)**—JOHN W GREENSIT, Holme-on-Swale, Thirsk, for **Royal Crossrigg** 2711, born in 1920, bred by Thomas Barton, Crossrigg, Penrith.
2856 **II. (£5.)**—JOHN A. WILLIS, Manor House, Carperby, Yorks, for **Royal Ringleader,** born in 1920.
2854 **III. (£3.)**—T. E. CLARKE, Challan, Silverdale, Lancs., for **Challan Cid** 2714, born in 1919.

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[1] £27 towards these Prizes were given by the Leicester Sheep Breeders' Association.

[2] Champion Silver Medal given by the Leicester Sheep Breeders' Association for the best exhibit of Leicester Sheep in Classes 288 to 291.

[3] Perpetual Challenge Cup given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 292–295. A Gold Medal will be given by the Society of Border Leicester Sheep Breeders to the winner of the Challenge Cup.

[4] Prizes given by the Society of Border Leicester Sheep Breeders.

Class 297.—*Wensleydale Shearling Rams.*

2861 **I. (£10),** & 2860 **R. N.**—John A. Willis, Manor House, Carperby, Yorks.
2858 **II. (£5),** & 2859 **III. (£3.)**—John W. Greensit, Holme-on-Swale, Thirsk, Yorks.
H. C.—2857.

Class 298.—*Three Wensleydale Shearling Rams.*

2863 **I. (£10.)**—John A. Willis, Manor House, Carperby, Yorks.
2862 **II. (£5.)**—John W. Greensit, Holme-on-Swale, Thirsk, Yorks.

Class 299.—*Three Wensleydale Shearling Ewes.*

2866 **I. (£10.)**—John A. Willis, Manor House, Carperby, Yorks.
2864 **II. (£5),** & 2865 **III. (£3.)**—John W. Greensit, Holme-on-Swale, Thirsk, Yorks.

Class 300.—*Wensleydale Yearling Ewes, shown in Wool.*[1]

2869 **I. (£10.)**—John A. Willis, Manor House, Carperby, for ewe bred by John M. Spensley Castle Bank, Redmire.
2867 **II. (£5.)**—John W. Greensit, Holme-on-Swale, Thirsk, Yorks.
2868 **III. (£3.)**—John A. Willis, Carperby, Yorks.

Kent or Romney Marsh.

Class 301.—*Kent or Romney Marsh Two Shear Rams.*

2875 **I. (£10, & Champion.[2]),** & 2876 **II. (£5, & R. N. for Champion.[2])**—J. Egerton Quested, The Firs, Cheriton, Kent.
2871 **III. (£3.)**—L. H. and G. W. Finn, Westwood Court, Faversham.
2873 **R. N.**—The Earl of Guilford, Waldershare Park, Dover.
H. C.—2877. **C.**—2872.

Class 302.—*Kent or Romney Marsh Shearling Rams.*[3]

2896 **I. (£15),** & 2897 **III. (£5.)**—J. Egerton Quested, The Firs, Cheriton, Kent.
2895 **II. (£10.)**—S. W. Millen, Copton Manor, Faversham.
2888 **IV. (£3.)**—The Earl of Guilford, Waldershare Park, Dover.
2900 **R. N.**—C. F. Wood, Teynham Court, Sittingbourne.

Class 303.—*Five Kent or Romney Marsh Shearling Rams.*[3]

2911 **I. (£20.)**—Walter F. Wood, Chekes Court, Sittingbourne.
2909 **II. (£15.)**—J. Egerton Quested, The Firs, Cheriton, Kent.
2906 **III. (£10.)**—The Earl of Guilford, Waldershare Park, Dover.
2905 **IV. (£5.)**—L. H. and G. W. Finn, Westwood Court, Faversham.
2908 **R. N.**—S. W. Millen, Copton Manor, Faversham.
C.—2904, 2907, 2910.

Class 304.—*Three Kent or Romney Marsh Ram Lambs.*

2916 **I. (£10),** & 2915 **R. N.**—L. H. and G. W. Finn, Westwood Court, Faversham.
2920 **II. (£5.)**—J. Egerton Quested, The Firs, Cheriton, Kent.
2913 **III. (£3.)**—H. E. Bennett, Boarden Farms, Hawkenbury, Staplehurst.
H. C.—2919. **C.**—2917, 2918.

Class 305.—*Three Kent or Romney Marsh Shearling Ewes.*

2929 **I. (£10, & Champion.[4])**—J. Egerton Quested, The Firs, Cheriton, Kent.
2925 **II. (£5),** & 2926 **R. N.**—The Earl of Guilford, Waldershare Park, Dover.
2928 **III. (£3.)**—S. W. Millen, Copton Manor, Faversham.
H. C.—2923. **C.**—2921.

Class 306.—*Three Kent or Romney Marsh Ewe Lambs.*

2939 **I. (£10, & R. N. for Champion.[4]),** & 2938 **III. (£3.)**—J. Egerton Quested, The Firs, Cheriton, Kent.
2932 **II. (£5.)**—H. E. Bennett, Boarden Farms, Hawkenbury, Staplehurst.
2933 **R. N.**—J. Rayner Betts, Greenhill Farm, Otham, Maidstone.
H. C.—2937. **C.**—2936.
Cup.[5]—J. E. Quested.
R. N. for Cup.[5]—S. W. Millen.

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[1] Prizes given by the Wensleydale Long-wool Sheep Breeders' Association.

[2] Champion Prize of £10 10*s.* given by the Kent or Romney Marsh Sheep Breeders' Association for the best Ram in Classes 301 and 302.

[3] Prizes given by the Kent or Romney Marsh Sheep Breeders' Association.

[4] Champion Prize of £10 10*s.* given by the Kent or Romney Marsh Sheep Breeders' Association for the best Pen of Ewes or Ewe Lambs in Classes 305 and 306.

[5] Silver Challenge Cup, value Forty Guineas, given through the Kent or Romney Marsh Sheep Breeders' Association, for the best group of Sheep, bred by Exhibitor, consisting of Two Shear Ram, Shearling Ram, Pen of Three Ram Lambs, Pen of Three Shearling Ewes and Pen of Three Ewe Lambs, in Classes 301, 302, 304, 305 and 306.

Cotswolds.

Class 307.—*Cotswold Shearling Rams.*[1]

2944 **I.** (**£10**), & 2945 **III.** (**£3.**)—WILLIAM GARNE, Ablington, Fairford, Glos.
2949 **II.** (**£5**), & 2950 **R. N.**—F. W. P. MATTHEWS, Fifield, Oxford.
H. C.—2940.

Class 308.—*Cotswold Ram Lambs.*

2954 **I.** (**£10**), & 2953 **R. N.**—WILLIAM GARNE, Ablington, Fairford, Glos.
2955 **II.** (**£5.**)—F. W. P. MATTHEWS, Fifield, Oxford.
H. C.—2951.

Class 309.—*Cotswold Shearling Ewes.*

2959 **I.** (**£10**), & 2960 **R. N.**—F. W. P. MATTHEWS, Fifield, Oxford.
2958 **II.** (**£5.**)—WILLIAM GARNE, Ablington, Fairford, Glos.

Class 310.—*Cotswold Ewe Lambs.*

2966 **I.** (**£10**), & 2965 **R. N.**—F. W. P. MATTHEWS, Fifield, Oxford.
2963 **II.** (**£5.**)—WILLIAM GARNE, Ablington, Fairford, Glos.

Devon Long-Wools.

Class 311.—*Devon Long-Wool Shearling Rams.*

2968 **I.** (**£10**), & 2967 **II.** (**£5.**)—FREDERICK WHITE, Torweston, Williton, Somerset.

Class 312.—*Three Devon Long-Wool Shearling Ewes.*

2969 **I** (**£10**), & 2970 **II.** (**£5.**)—FREDERICK WHITE, Torweston, Williton, Somerset.

South Devons.

Class 313.—*South Devon Two Shear Rams.*[2]

2971 **I.** (**£10.**)—J. R. HALLETT, Sherford Barton, Brixton, Plymouth, for ram bred by the French Monks, Loddiswell.
2972 **II.** (**£5.**)—WILLIAM HAWKE, JUNR., Trebudannon, St. Columb, Cornwall, for ram bred by W. F. Sobey, Trenant, Liskeard.

Class 314.—*South Devon Shearling Rams.*

2973 **I.** (**£10.**)—J. R. HALLETT, Sherford Barton, Brixton, Plymouth.
2974 **II.** (**£5.**)—WILLIAM HAWKE, JUNR., Trebudannon, St. Columb, Cornwall.

Class 315.—*Three South Devon Shearling Ewes.*

2975 **I.** (**£10.**)—WILLIAM HAWKE, JUN., Trebudannon, St. Columb, Cornwall.

Class 316.—*Three South Devon Ewe Lambs.*[2]

2976 **I.** (**£10.**)—WILLIAM HAWKE, JUN., Trebudannon, St. Columb, Cornwall.
2977 **II.** (**£5.**)—JOHN W. SYMONS, Sherford, Brixton, Plymouth.

Dartmoors.

Class 317.—*Dartmoor Rams, Two Shear and upwards.*[3]

2979 **I.** (**£10.**)—RICHARD P. LUCE, Lower Chaddlehanger, Tavistock, for **Chaddlehanger General** 2264, born in 1920.
2978 **II.** (**£5**)—W. A. JOHNS & SONS, Cleave, Lifton, Devon, for **Squire's Perfection** 2242, born in 1920, bred by Squires & Sons, Ashburton.

Class 318.—*Dartmoor Shearling Rams.*

2981 **I.** (**£10**), & 2982 **II.** (**£5.**)—R. R. DAWE, Ford Farm, Sydenham Dameral, Tavistock.
2983 **R. N.**—RICHARD P. LUCE, Lower Chaddlehanger, Tavistock, for **Milton Abbott No. 1.**

Class 319.—*Three Dartmoor Shearling Ewes.*

2987 **I.** (**£10.**)—JOHN WOTTON, Dunwell, Ugborough, Ivybridge.

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[1] **Prizes given by the Cotswold Sheep Society.**
[2] **Prizes given by the South Devon Flock Book Association.**
[3] **Prizes given by the Dartmoor Sheep Breeders' and Flock Book Association.**

Exmoor Horn.

Class 320.—*Exmoor Horn Rams, Two Shear and Upwards.*[1]

2988 **I. (£10.)**—F. C. GILL, Westland Farm, Kentisbury, Barnstaple, for **Great Hele** 27, born in 1918, bred by D. N. Purchase, Great Hele, Barton, South Molton.

Class 321.—*Exmoor Horn Shearling Rams.*

2989 **I. (£10.)**—J. HARRIS, Wistland Pound, Kentisbury, Barnstaple, for **Wistland Pound Blizzard.**
2990 **II. (£5.)**—J. HARRIS, for **Wistland Pound Ned.**

Class 322.—*Three Exmoor Horn Shearling Ewes.*

2991 **I. (£10)** & 2992 **II. (£5.)**—P. EVERARD, Miltons, Dulverton, Somerset.
2993 **R. N.**—F. C. GILL, Westland Farm, Kentisbury, Barnstaple.

Cheviots.

Class 323.—*Cheviot Rams, Two Shear and Upwards.*[2]

2996 **I. (£10.)**—J. J. and I. T. DODD, Riccarton, Newcastleton, N.B., for **Riccarton Dandy.**
2997 **II. (£5)**, & 2998 **R. N.**—JOHN ROBSON, Newton, Bellingham, for rams born in 1920.

Class 324.—*Cheviot Shearling Rams.*

3001 **I. (£10)**, & 3000 **II. (£5.)**—JOHN ROBSON, Newton, Bellingham.

Class 325.—*Cheviot Shearling Ewes.*

3002 **I. (£10)**, & 3003 **II. (£5.)**—JOHN ROBSON, Newton, Bellingham.

Welsh Mountain.

Class 326.—*Welsh Mountain Rams, Shearling and Upwards.*

3006 **I. (£10.)**—MAJOR ERIC J. W. PLATT, Gorddinog, Llanfairfechan, for **Madryn Melyn** 1047, born in 1920.
3005 **II. (£5.)**—MAJOR ERIC J. W. PLATT, for **Madryn Llewelyn** 1041, born in 1919.
3007 **R. N.**—UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor, for **Snowdon M** 32.

Class 327.—*Three Welsh Mountain Shearling Ewes.*

3012 **I. (£10)**, & 3013 **II. (£5.)**—UNIVERSITY COLLEGE OF NORTH WALES, College Farm, Aber, Bangor.
3011 **R. N.**—MAJOR ERIC J. W. PLATT, Gorddinog, Llanfairfechan.

Black Welsh Mountain.

Class 328.—*Black Welsh Mountain Shearling Rams.*

3017 **I. (£10.)**—MRS. JERVOISE, Herriard Park, Basingstoke.
3014 **II. (£5.)**—ALFRED E. W. DARBY, Adcote, Shrewsbury, for ram bred by A. Mostyn Owen, Woodhouse, Oswestry.
3016 **R. N.**—R. M. GREAVES, Wern, Portmadoc.

Class 329.—*Three Black Welsh Mountain Shearling Ewes.*[3]

3020 **I. (£10)**, & 3019 **R. N.**—R. M. GREAVES, Wern, Portmadoc.
3018 **II. (£5.)**—ALFRED E. W. DARBY, Adcote, Shrewsbury.

Black-Faced Mountain.[4]

Class 330.—*Black-faced Mountain Rams, Two Shear and Upwards.*

3024 **I. (£10.)**—OCTAVIUS MONKHOUSE, Cowshill, Wearhead, co. Durham, for ram born in 1920.
3025 **II. (£5.)**—OCTAVIUS MONKHOUSE, for **Sunshine**, born in 1920.
3026 **R. N.**—JOHN ROBSON, Newton, Bellingham, for **Carry On.**

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[1] Prizes given by the Exmoor Horn Sheep Breeders' Society.
[2] Prizes given by Breeders of Cheviot Sheep.
[3] Prizes given by the Black Welsh Mountain Sheep Breeders' Association.
[4] £24 towards these Prizes were given by the English Black-face Sheep Society.

Class 331.—*Black-faced Mountain Shearling Rams.*

3027 **I. (£10.)**—Octavius Monkhouse, Cowshill, Wearhead, co. Durham, for ram bred by W. Henderson, Craigends.
3031 **II. (£5.)**—John Robson, Newton, Bellingham.
3028 **III. (£3.)**—Octavius Monkhouse.

Class 332.—*Black-faced Mountain Shearling Ewes.*

3032 **I. (£10),** & 3033 **III. (£3.)**—Octavius Monkhouse, Cowshill, Wearhead, co. Durham.
3036 **II. (£5.)**—John Robson, Newton, Bellingham.

PIGS.

Large Whites.

Class 333.—*Large White Boars, born in or before* 1920.

3040 **I. (£10.)**—Chivers & Sons, Ltd., Histon, Cambridge, for **Spalding Kingmaker** 30449 (T.N. 9166), born Aug. 4, 1919, bred by A. W. White, Hillegom, Spalding; *s.* Kingmaker 24151, *d.* Spalding Queen Mary 5th 61232 *by* Banner of Spalding 21987.
3042 **II. (£5.)**—John Fillingham, The George Hotel, Grantham, for **Progress of Grantham** 24387 (T.N. 3014), born Jan. 7, 1918, bred by Edmund Wherry, Bourne, Lincs; *s.* Emperor of Pinchbeck 21077, *d.* Queen Anne of Pinchbeck 47548 *by* That's 'Im of Worsley 1st 19095.
3046 **III. (£3.)**—E. Harding, Packwood Grange, Dorridge, near Birmingham, for **Bourne Bar-None 86th** 28787 (T.N. 3525), born April 14, 1919, bred by Edmund Wherry, Bourne, Lincs.; *s.* Bourne Bar-None 20847, *d.* Pinchbeck Queen 2nd 47444 *by* Roger of Pinchbeck 20193.
3052 **R. N.**—J. Pierpont Morgan, Wall Hall, Aldenham, Watford, for **Bourne Cantab.**
H. C.—3043, 3047.

Class 334.—*Large White Boars, born in* 1921, *before July* 1.[1]

3057 **I. (£10, Champion,[2] & R. N. for Champion.[3])**—Chivers & Sons, Limited, Histon, Cambridge, for **Histon Wonder** (T.N. 1496), born Jan. 2; *s.* Histon Snowman 24047, *d.* Belle of Histon 48938 *by* Jay of Wyboston 16149.
3066 **II. (£5.)**—Edmund Wherry, Bourne, Lincolnshire, for **Bourne Baron 3rd** (T.N. 4279), born March 7; *s.* Baron of Bourne 28633, *d.* Bourne Bonetta 64892 *by* Bourne Bandmaster 50th 22071.
3058 **III. (£3.)**—Arthur B. Edwards, Brewery House, Harlow, for **Boxted Turk** (T.N. 187), born Jan. 30, bred by the Essex County Council, Boxted Colony, Colchester; *s.* Turk of Bottesford 27417, *d.* Jewel of Boxted 60002 *by* Bonne Bourne 22029.
3063 **R. N.**—J. Pierpont Morgan, Wall Hall, Aldenham, Watford, for **Aldenham Lion Heart.**
H. C.—3062.

Class 335.—*Large White Boars, born in* 1921, *on or after July* 1.[1]

3081 **I. (£10, & R. N. for Champion.[2])**—Edmund Wherry, Bourne, Lincolnshire, for **Bourne King David** (T.N. 4403), born July 1; *s.* Bourne King John 26091, *d.* Bourne Queen 26th 65034 *by* Bourne Bar None 20847.
3082 **II. (£5.)**—Edmund Wherry, for **Bourne King George** (T.N. 4402), born July 1; *s.* Bourne King John 26091, *d.* Bourne Queen 26th 65034 *by* Bourne Bar None 20847.
3083 **III. (£3.)**—Alfred W. White, Hillegom, Spalding, for **Spalding Monitor 2nd** (T.N. 1206), born July 4; *s.* Monitor of Spalding 30081, *d.* Spalding Matchless 3rd 55132 *by* Banner of Spalding 21987.
3072 **R. N.**—Arthur B. Edwards, Brewery House, Harlow, for **Spalding Peacock.**
H. C.—3070, 3074. **C.**—3076.

Class 336.—*Large White Boars, born in* 1922.

3115 **I. (£10.)**—Edmund Wherry, Bourne, Lincolnshire, for **Bourne Bar None 229th** (T.N. 4638), born Jan. 3; *s.* Bourne Bar None 125th 28835, *d.* Bourne Bonetta 64892 *by* Bourne Bandmaster 50th 22071
3086 **II. (£5.)**—Stafford Allen & Sons, Ltd., Long Melford, Suffolk, for boar (T.N. 489), born Jan. 4; *s.* Lawford King 2nd 26917, *d.* Annie of Copped Hall 52120 *by* Walton Emperor 21459.
3096 **III. (£3.)**—Daniel R. Daybell, Bottesford, Nottingham, for boar (T.N. 445), born Jan. 4; *s.* Worsley Jay 87th 27619, *d.* Bottesford Buttercup 11th 49012 *by* Ringleader of Bottesford 2nd 17623.
3092 **R. N.**—Daniel R. Daybell.
H. C.—3088, 3093, 3114.

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[1] Prizes given by the National Pig Breeders' Association.

[2] Champion Gold Medal given by the National Pig Breeders' Association for the best Large White Boar in Classes 333–336.

[3] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Large White Pig in Classes 333–339.

Class 337.—*Large White Breeding Sows, born in or before* 1920.

3135 **I. (£10, Champion,[1] & Champion.[2])**—Edmund Wherry, Bourne, Lincolnshire, for **Worsley Bourne Queen** 71108 (T.N. 9045), born Jan. 22, 1919, farrowed Feb. 15, bred by Sir Gilbert Greenall, Bt., C.V.O., Walton Hall, Warrington; *s.* Jay of Worsley 14th 16147, *d.* Worsley Queen 64th 48098 *by* Worsley Emperor 68th 19241.

3119 **II. (£5.)**—Arthur B. Edwards, Brewery House, Harlow, for **Bushes Lily 11th** 65554 (T.N. 727), born Jan. 21, 1919, farrowed March 2; *s.* Spalding Sentinel 24415, *d.* Bushes Lily 43874 *by* Forest Hercules 17377.

3118 **III. (£3.)**—Chivers & Sons, Ltd., Histon, Cambridge, for **Histon Bertha 2nd** 53920 (T.N. 1971), born Sept. 2, 1917, farrowed April 28; *s.* Spalding Vulcan 17703, *d.* Histon Beryl 4th 44418 *by* Weston Volunteer 17855.

3130 **R. N.**—J. I. Major, Whyte House, Ramsey, Hunts., for **Ramsey Belle 12th.**

H. C.—3123, 3129, 3131, 3132, 3133.

Class 338.—*Large White Sows, born in* 1921, *before July* 1.

3160 **I. (£10, & R. N. for Champion.[2])**—Alfred W. White, Hillegom, Spalding, for **Spalding Catalina 16th** (T.N. 1030), born Jan. 5; *s.* Spalding Kingmaker 30449, *d.* Spalding Catalina 4th 55128 *by* Spalding Wonder 3rd 20227.

3140 **II. (£5.)**—Chivers & Sons, Ltd., Histon, Cambridge, for **Histon Belle 37th** (T.N. 1499), born Jan. 2; *s.* Histon Snowman 24047, *d.* Belle of Histon 48938 *by* Jay of Wyboston 16149.

3157 **III. (£3.)**—F. B. and F. J. Pitcher, Mangapp Manor, Burnham-on-Crouch, for **Mangapp Artiste 6th** (T.N. 456), born Feb. 14; *s.* Cantab Right Man 23703a, *d.* Artiste of Mangapp 52256 *by* Spalding Vulcan 17703.

3161 **R. N.**—Alfred W. White, for **Spalding Queen Mary 16th.**

H. C.—3141, 3147, 3154. **C.**—3149.

Class 339.—*Large White Sows, born in* 1921, *on or after July* 1.[3]

3185 **I. (£10.)**—Edmund Wherry, Bourne, Lincolnshire, for **Bourne Mabel 30th** (T.N. 4412), born July 2; *s.* Bourne Bar-None 125th 28835, *d.* Bourne Mabel 26th 65012 *by* Bourne King John 26091.

3182 **II. (£5.)**—E. Towgood & Sons, Ltd., Sawston Mill Farm, Sawston, Cambs, for **Towgood Barmaid 6th** (T.N. 447), born July 13; *s.* Bourne Bar-None 33rd 23549, *d.* Towgood Marigold 2nd 61710 *by* Turk of Towgood 24717.

3176 **III. (£3.)**—E. Harding, Packwood Grange, Dorridge, near Birmingham, for **Packwood White Rose 8th** (T.N. 1112), born July 30; *s.* Bourne Bar-None 86th 28787, *d.* Packwood White Rose 50184 *by* Packwood Victor 2nd 20155.

3163 **R. N.**—Chivers & Sons, Ltd., Histon, Cambridge, for **Histon Lily 30th.**

H. C.—3162, 3173, 3183, 3188. **C.**—3171, 3172.

Class 340.—*Three Large White Sows, born in* 1922.

3203 **I. (£10.)**—Edmund Wherry, Bourne, Lincolnshire, for sows born Jan. 3; *s.* Bourne Bar-None 125th 28835, *d.* Bourne Bonetta 64892 *by* Bourne Bandmaster 50th 22071.

3192 **II. (£5.)**—Daniel R. Daybell, Bottesford, Nottingham, for sows born Jan. 18; *s.* Monitor of Bottesford, *d.* Bottesford Buttercup 41st 64830 *by* Worsley Jay 87th 27619.

3196 **III. (£3.)**—Albert Laird, The Manor, Sundon, Dunstable, for sows born Jan. 3; *s.* Sundon Achilles 27299, *d.* Sundon Becky 61420 *by* Sundon Lord Cavan 24625.

3191 **R. N.**—Daniel R. Daybell.

H. C.—3189, 3198. **C.**—3201.

Middle Whites.

Class 341.—*Middle White Boars, born in or before* 1920.

3214 **I. (£10, Champion,[4] & R. N. for Champion.[5])**—Leopold C. Paget, Middlethorpe Hall, York, for **Wharfedale Deliverance** 32575 (T.N. 957), born Jan. 3, 1920; *s.* Wharfedale Lifeboat 28351, *d.* Wharfedale Surety 57482 *by* Croxteth Banker 4th 20503.

3205 **II. (£5, & R. N. for Champion.[4])**—John Chivers, Estate Office, Histon, Cambridge for **Histon Rufus** (T.N. 548), born March 1, 1920; *s.* Histon Shrewsbury 2nd 28081, *d.* **Prestwood** Rossadora 6th 57178 *by* Prestwood Acrobat 23197.

3212 **III. (£3.)**—Albert Laird, The Manor, Sundon, Dunstable, for **Sundon Rambler** 32469 (T.N. 1751), born July 2, 1918; *s.* Sundon M.C.C. 21789, *d.* Sundon Fascinating Combine 43224 *by* Sundon Conqueror 16799.

3211 **R. N.**—J. H. Holland, Peene House, Newington, Folkestone, for **Peene Dasher.**

H. C.—3204. **C.**—3207, 3215.

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[1] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Large White Pig in Classes 333–339.

[2] Champion Gold Medal given by the National Pig Breeders' Association for the best Large White Sow in Classes 337–339.

[3] Prizes given by the National Pig Breeders' Association.

[4] Champion Gold Medal given by the National Pig Breeders' Association for the best Middle White Boar in Classes 341–344.

[5] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Middle White Pig in Classes 341–347.

Class 342.—*Middle White Boars, born in* 1921, *before July* 1.[1]

3224 **I. (£10.)**—Mrs. Hayes Sadler, Norsbury, Sutton Scotney, Hants, for **Norsbury Woodman** (T.N. 106), born Feb. 15 ; *s.* Robin of Norsbury 32301, *d.* Histon Woodlands 73464 *by* Histon Shrewsbury 2nd 28081.

3223 **II. (£5.)**—L. Harrison & Co., Ltd., Pedigree Live Stock Farms, Coolham, Sussex, for **Shipley Snowball** (T.N. 155), born Jan 3 ; *s.* Pendley King 32179, *d.* Shipley Pride 3rd 75332 *by* Histon Shewsbury 2nd 28081.

3226 **III. (£3.)**—Cuthbert C. Smith, The Grove, Cropwell Butler, near Nottingham, for **Acrobat of Cropwell** (T.N. 488), born Jan. 16, bred by Dr. M. J. Rowlands, Nash Farm, Keston, Kent ; *s.* Keston Shrewsbury 28127, *d.* Prestwood Prolific 8th 57174 *by* Prestonwood Acrobat 1st 23197.

3222 **R. N.**—S. F. Edge, Gallops Homestead, Ditchling, Sussex, for **Albany Rambler 3rd.**

H. C.—3225. **C.**—3219, 3227.

Class 343.—*Middle White Boars, born in* 1921, *on or after July* 1.[1]

3232 **I. (£10.)**—John Chivers, Estate Office, Histon, Cambridge, for **Histon Woodman 12th** (T.N. 110), born July 5 ; *s.* Histon Rover 28075, *d.* Lady Woodlands 56880 *by* Sundon Scott 20599.

3242 **II. (£5.)**—Mrs. Hayes Sadler, Norsbury, Sutton Scotney, Hants, for **Scotty of Norsbury** (T.N. 139), born Aug. 15, bred by the late Selwyn Austin, Roundwood, Micheldever Station ; *s.* Scotty of Prestwood 25533, *d.* Peene Clarice 74452 *by* Peene Shrewsbury 28213.

3241 **III. (£3.)**—Major St. John R. Pigott and N. Conant, Burningfold Farm, Dunsfold, Surrey, for **Burningfold Hermes 6th** (T.N. 137), born Aug. 20 ; *s.* Hammonds Hermes 31651, *d.* Histon Welcome 8th 73452 *by* Histon Halo 25339.

3237 **R. N.**—J. H. Holland, Peene House, Newington, Folkestone.

H. C.—3228, 3239. **C.**—3233.

Class 344.—*Middle White Boars, born in* 1922.

3262 **I. (£10.)**—Tresham Gilbey, White Hall, Bishops Stortford, for **Stortford Marquis** (T.N. 8), born Feb. 7 ; *s.* Prince of Stortford 436, *d.* Stortford Ruby *by* Shrewsbury 4th.

3256 **II. (£5.)**—John Chivers, Estate Office, Histon, Cambridge, for **Histon Baron 3rd** (T.N. 218), born Jan. 6 ; *s.* Histon Baron 31747, *d.* Rosadora of Histon 2nd 63524 *by* Pendley Prince 25485.

3251 **III. (£3.)**—Commander and Mrs. Hubert Boulnois, The Navy Pig Farm, Yateley, Hants, for **Yateley Nonsuch** (T.N. 18), born Jan. 14 ; *s.* Norsbury Valour 32099, *d.* Niobe of Yateley *by* Bonny Boy of Bookham 27853.

3252 **R. N.**—Commander and Mrs Hubert Boulnois, for **Yateley Nimrod.**

H. C.—3246, 3266. **C.**—3271, 3275, 3278, 3279, 3282.

Class 345.—*Middle White Breeding Sows, born in or before* 1920.

3286 **I. (£10, & R. N. for Champion.[3])**—John Chivers, Estate Office, Histon, Cambridge, for **Histon Pianissimo** 51542 (T.N. 365), born Jan. 13, 1916, farrowed Jan 26 ; *s.* Shrewsbury 19511, *d.* Perfection Pride 40036 *by* Holywell Jonathan 14435.

3292 **II. (£5.)**—J. H. Holland, Peene House, Newington, Folkestone, for **Peene Beauty 2nd** 63368 (T.N. 117), born Aug. 15, 1918, farrowed Feb. 13 ; *s.* Boaz of Peene 25169, *d.* Peene Polly 57084 *by* Peene Prince 21761.

3294 **III. (£3.)**—Leopold C. Paget, Middlethorpe Hall, York, for **Wharfedale Marie 2nd** 63766 (T.N. 491), born Jan. 5, 1918 farrowed Jan. 25 ; *s.* Wharfedale Corporal 19539, *d.* Wharfedale Shepherdess 2nd 43246 *by* Sentinel of Wharfedale 18123.

3287 **R. N.**—John Chivers, for **Histon Choice 12th.**

H. C.—3284, 3289. **C.**—3285, 3290, 3291.

Class 346.—*Middle White Sows, born in* 1921, *before July* 1.

3312 **I. (£10, Champion,[2] & Champion.[3])**—Leopold C. Paget, Middlethorpe Hall, York, for **Wharfedale Radiance** (T.N. 9), born Jan. 5 ; *s.* Wharfedale Deliverance 32575, *d.* Wharfedale Attraction 57386 *by* Pendley Lad 23191.

3302 **II. (£5.)**—S. F. Edge, Gallops Homestead, Ditchling, Sussex, for **Albany Sunflower Queen** (T.N. 1001), born Jan. 11 ; *s.* Shrewsbury of Albany 21777, *d.* Albany Sunflower 51272 *by* Wharfedale Surprise 20629.

3300 **III. (£3.)**—John Chivers, Estate Office, Histon, Cambridge, for **Histon Lady Holly 4th** (T.N. 49), born Jan. 16 ; *s.* Histon Woodman 28099, *d.* Histon Lady Holly 63064 *by* Bookham of Harthay 19369.

3301 **R. N.**—John Chivers, for **Histon Peerless 20th.**

H. C.—3303, 3309. **C.**—3305, 3314.

Class 347.—*Middle White Sows, born in* 1921, *on or after July* 1.[1]

3329 **I. (£10.)**—J. H. Holland, Peene House, Newington, Folkestone, for **Peene Beauty** (T.N. 388), born July 8 ; *s.* Mick of Peene 30263, *d.* Peene Beauty 2nd 63368 *by* Boaz of Peene 25169.

[1] Prizes given by the National Pig Breeders' Association.

[2] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Middle White Pig in Classes 341–347.

[3] Champion Gold Medal given by the National Pig Breeders' Association for the best Middle White Sow in Classes 345–347.

3321 **II. (£5.)**—John Chivers, Estate Office, Histon, Cambridge, for **Histon Choice 42nd** (T.N. 221), born Aug. 22; *s.* Histon Wanderer 25349, *d.* Histon Choice 2nd 56696 *by* Durbar of Histon 21679.

3324 **III. (£3.)**—L. Harrison & Co., Ltd., Pedigree Live Stock Farms, Coolham, Sussex. for **Shipley Pride 14th** (T.N. 212), born July 3; *s.* Pendley King 32179, *d.* Shipley Pride 3rd 75332 *by* Histon Shrewsbury 2nd 28081.

3319 **R. N.**—John Chivers, for **Histon Rosadora 18th.**

H. C.—3317, 3323, 3332. **C.**—3320.

Class 348.—*Three Middle White Sows, born in* 1922.

3348 **I. (£10.)**—Albert Laird, The Manor, Sundon, Dunstable, for sows born Jan. 1; *s.* Holywell Charlie, *d.* Peene Bountiful 74446 *by* Peene Shrewsbury 28213.

3354 **II. (£5.)**—Lt.-Col. H. Spender-Clay, M.P., Ford Manor, Lingfield, Surrey, for sows born Jan. 12; *s.* Hammonds Spenser, *d.* Wharfedale Impression 75910 *by* Preserver of Wharfedale 25493.

3337 **III. (£3.)**—Brig.-General B. Atkinson, C.B., C.M.G., Mistley Middle White Herd, Manningtree, for sows born Jan. 2; *s.* Wharfedale Frost 32579, *d.* Wharfedale Nightingale 75932 *by* Wharfedale Dominion 25643.

3352 **R. N.**—Mrs. Hayes Sadler, Norsbury, Sutton Scotney, Hants.

H. C.—3336, 3351. **C.**—3341, 3342.

Tamworths.

Class 349.—*Tamworth Boars, born in or before* 1920.

3356 **I. (£10.)**—Robert Ibbotson, Knowle, Dorridge, near Birmingham, for **Knowle Accountant** 32663 (T.N. 183), born Aug. 2, 1920; *s.* Basildon Max 25683, *d.* Knowle Model 10th 52048 *by* Knowle Arundel 21855.

3358 **II. (£5.)**—W. H. Mitchell, Elmdene, Kenilworth, for **Malpas of Elmdene** 32717 (T.N. 81), born July 27, 1920, bred by J. L. and A. Riley, Putley, Ledbury; *s.* Choice of Putley 23313, *d.* Pansy of Putley 46080 *by* Home Rule 18205.

Class 350.—*Tamworth Boars, born in* 1921.[1]

3361 **I. (£10, Champion,[2] & R.N. for Champion.[3])**—W. H. Mitchell, Elmdene, Kenilworth, for **Elmdene Wilfred** (T.N. 312), born March 6; *s.* Middleton of Elmdene 32725, *d.* Elmdene Victory 63934 *by* Hereford 21843.

3363 **II. (£5, & R. N. for Champion.[2])**—B. I. Philip, Botts Green House, Whitacre, Coleshill, Warwickshire, for **Milton of Whitacre** (T.N. 23), born Jan. 6, bred by C. L. Coxon, Milton, Kingsland, Herefordshire; *s.* Mons of Middleton 25775, *d.* Middleton Mainz 57614 *by* Mitcheldene of Middleton 23343.

3360 **III. (£3.)**—Robert Ibbotson, Knowle, Dorridge, near Birmingham, for **Knowle Neptune** (T.N. 237), born Jan. 10; *s.* Knowle Dreadnought 28419, *d.* Knowle Model 10th 52048 *by* Knowle Arundel 21855.

3359 **R. N.**—Robert Ibbotson, for **Knowle Bruce.**

Class 351.—*Tamworth Boars, born in* 1922.

3368 **I. £10.)**—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, for boar (T.N. 150) born Jan. 2; *s.* Knowle Darlington 32687, *d.* Beauty of Milton 76090 *by* Mons of Middleton 25775.

3365 **II. (£5.)**—Robert Ibbotson, Knowle, Dorridge, near Birmingham, for boar (T.N. 383) born Jan. 10; *s.* Knowle Neptune, *d.* Knowle Venus 76210 *by* Basildon Max 25683.

3369 **III. (£3.)**—Major J. A. Morrison, D.S.O., for boar (T.N. 152) born Jan. 2; *s.* Knowle Darlington 32687, *d* Basildon Queenie 3rd 63898 *by* Whitacre Firaway 25821.

3367 **R. N.**—W. H. Mitchell, Elmdene, Kenilworth.

H. C.—3366.

Class 352.—*Tamworth Breeding Sows, born in or before* 1920.

3373 **I. (£10, Champion,[3] & Champion.[4])**—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, for **Basildon Golden Queen 6th,** born Jan. 24, 1920, farrowed March 18; *s.* Whitacre Firaway 25821, *d.* Basildon Golden Queen 2nd 57506 *by* Whitacre Firaway 25821.

3374 **II. (£5.)**—Major J. A. Morrison, D.S.O., for **Beauty 4th of Milton** 76096 (T.N. 5), born Jan. 3, 1920, farrowed March 20, bred by Egbert De Hamel, Middleton Hall, Tamworth; *s.* Mons of Middleton 25775, *d.* Middleton Malines 57610 *by* Mancunium of Middleton 23341.

3371 **III. (£3.)**—Robert Ibbotson, Knowle, Dorridge, near Birmingham, for **Knowle Favorite** 63960 (T.N. 77), born March 10, 1919, farrowed Jan. 3; *s.* Knowle Arundel 21855, *d.* Knowle Madeline 2nd 46010 *by* Sunstar 18269.

3372 **R. N.**—Robert Ibbotson, for **Knowle Model 19th.**

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[1] Prizes given by the National Pig Breeders' Association.

[2] Champion Gold Medal given by the National Pig Breeders' Association for the best Tamworth Boar in Classes 349–351.

[3] Silver Challenge Cup, value Twenty-five Guineas, given by the National Pig Breeders' Association for the best Tamworth Pig in Classes 349–353.

[4] Champion Gold Medal given by the National Pig Breeders' Association for the best Tamworth Sow in Classes 352 and 353.

Class 353.—*Tamworth Sows, born in* 1921.

3378 **I. (£10. & R. N. for Champion.[1])**—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for **Milton Beauty 3rd** (T.N. 29), born Jan. 22, bred by C. L. Coxon, Milton, Kingsland, Herefordshire; *s.* Mons of Middleton 25775, *d.* Middleton Malines 57610 *by* Mancunium of Middleton 23341.

3375 **II. (£5.)**—ROBERT IBBOTSON, Knowle, Dorridge, near Birmingham, for **Knowle Favour** (T.N. 232), born Jan. 6; *s.* Knowle Dreadnought 28419, *d.* Knowle Fashion 63962 *by* Knowle Arundel 21855.

3379 **III. (£3.)**—B. I. PHILIP, Botts Green House, near Coleshill, Warwickshire, for **Whitacre Aralia** (T.N. 316), born Jan. 28; *s.* Arbury Royal 28371, *d.* Whitacre Kathleen 64082 *by* Enterprise of Whitacre 21841.

3377 **R. N.**—W. H. MITCHELL, Elmdene, Kenilworth, for **Elmdene Pip.**

H. C.—3380, 3381.

Class 354.—*Three Tamworth Sows, born in* 1922.

3383 **I. (£10.)**—ROBERT IBBOTSON, Knowle, Dorridge, near Birmingham, for sows born Jan. 10; *s.* Max of Putley 32721, *d.* Knowle Fashion 63962 *by* Knowle Arundel 21855.

3384 **II. (£5.)**—W. H. MITCHELL, Elmdene, Kenilworth, for sows born Jan. 20; *s.* Malpas of Elmdene 32717, *d.* Elmdene Victory 63934 *by* Hereford 21843.

3382 **III. (£3.)**—CHARLES L. COXON, Milton, Kingsland, Herefordshire, for sows born Jan. 2; *s.* Mons of Middleton 25775, *d.* Middleton Mainz 57614 *by* Mitcheldene of Middleton 23343.

Berkshires.

Class 355.—*Berkshire Boars, born in or before* 1920.

3398 **I. (£10, R. N. for Champion,[2] & R. N. for Champion.[3])**—W. HOWARD PALMER, Stokes Farm, Wokingham, for **Murrell Prince** 20332, born June 29, 1917; *s.* Minley King 18364, *d.* Murrell Primrose 19580 *by* Whitby Longfellow 18699.

3397 **II. (£5.)**—JAMES NAGLE, Pamber Place, Charter Ley, near Basingstoke, for **Pamber President** 22702, born April 10, 1920; *s.* Minley King 18364, *d.* Compton Guest 20188 *by* Manor Baronet 18978.

3393 **III. (£3.)**—CAPT. P. LAWSON-JOHNSTON, East Ridge, Cowfold, Sussex, for **Basildon Onward** 24553, born Aug. 2, 1920, bred by Major J. A. Morrison, D.S.O., Basildon Park, Reading; *s.* Hurry Onward 22033, *d.* Basildon Juvenal 20717 *by* Goldicote Rob 20126.

3391 **R. N.**—L. HARRISON & CO., LTD., Coolham, Sussex, for **Peel Tommy.**

H. C.—3392, 3394. **C.**—3386.

Class 356.—*Berkshire Boars, born in* 1921, *before July* 1.[4]

3404 **I. (£10, Champion,[2] Champion,[3] Champion,[5] & Champion.[6])**—FRANK TOWNEND, Highfield, Moor Allerton, Leeds, for **Highfield Royal Pygmalion** 26309, born April 1; *s.* Pygmalion 19872, *d.* Eaton Princess Royal 3rd 22450 *by* Manor Record 20276.

3403 **II. (£5.)**—W. HOWARD PALMER, Stokes Farm, Wokingham, for **Murrell Marquis,** born March 10; *s.* Murrell Prince 20332, *d.* Murrell Minnie 21907 *by* Minley King 18364.

3399 **III. (£3.)**—LORD BOLTON, Bolton Hall, Leyburn, for **Wensley True Boy** 25968, born March 3; *s.* Eaton True Boy 22488, *d.* Wensley Crocus 2nd 20643 *by* Moundmere Ally 18602.

3402 **R. N.**—JAMES NAGLE, Pamber Place, Charter Ley, near Basingstoke, for **Pamber Polymagnus.**

H. C.—3401.

Class 357.—*Berkshire Boars, born in* 1921, *on or after July* 1.[4]

3416 **I. (£10.)**—JAMES NAGLE, Pamber Place, Charter Ley, near Basingstoke, for **Pamber Gay Crusader** 25740, born July 3; *s.* Pamber President 22702, *d.* Pamber Plunkette 22700 *by* Minley King 18364.

3413 **II. (£5.)**—LADY LUGARD, Little Parkhurst, Abinger Common, Dorking, for **Abinger President** 25837, born Aug. 1; *s.* Abinger Jack 22931, *d.* Eaton Princess Royal 4th 22451 *by* Manor Record 20276.

3418 **III. (£3.)**—W. HOWARD PALMER, Stokes Farm, Wokingham, for boar, born Sept. 30; *s.* Motcombe Scott 22259, *d.* Murrell Betka 19973 *by* Murrell King 19579.

3415 **R. N.**—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, for **Basildon Lion 1st.**

H. C.—3405, 3409. **C.**—3407, 3412.

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[1] Champion Gold Medal given by the National Pig Breeders' Association for the best Tamworth Sow in Classes 352 and 353.

[2] Champion Prize of £5 5*s.* given by the British Berkshire Society for the best Berkshire Boar in Classes 355–358.

[3] Challenge Cup given by the British Berkshire Society for the best Boar in Classes 355–358.

[4] Prizes given by the British Berkshire Society.

[5] Champion Prize of £10 10*s.* given by the British Berkshire Society for the best Berkshire Boar or Sow in Classes 355–361. A Gold Medal was given by the British Berkshire Society to the Breeder of this Champion Pig.

[6] The "Eaton" Silver Challenge Cup, value Fifty Guineas, given through the British Berkshire Society for the best Boar or Sow in Classes 355–361.

Class 358.—*Berkshire Boars, born in* 1922.

3429 **I. (£10.)**—Lady Lugard, Little Parkhurst, Abinger Common, Dorking, for boar born Jan. 6; *s.* Abinger Pioneer 25243, *d.* Abinger Pretty 23718 *by* Kingstone Peacemaker 21339.
3426 **II. (£5.)**—James Ismay, Iwerne Minster House, Blandford, for boar, born Jan. 2; *s.* Hurry On 19635, *d.* Land Girl 2nd 22124 *by* Braishfield Buck 19909.
3420 **III. (£3.)**—R. W. Carson, Halse, Brackley, for **Forest Brampton,** born Jan. 6; *s.* Herriard Premier 2nd 21854, *d.* Iwerne Sunbeam 20101 *by* Hurry On 19635.
3433 **R. N.**—James Nagle, Pamber Place, Charter Ley, near Basingstoke, for **Pamber White-eyed Kaffir.**
H. C.—3432, 3435. **C.**—3425, 3434.

Class 359.—*Berkshire Breeding Sows, born in or before* 1920.

3452 **I. (£10, & R. N. for Champion.[1])**—W. Howard Palmer, Stokes Farm, Wokingham, for **Murrell Lassie** 19975, born May 20, 1917, farrowed Jan. 27; *s.* Minley King 18364, *d.* Murrell Lass 18935 *by* Minley Champion 17122.
3450 **II. (£5.)**—James Nagle, Pamber Place, Charter Ley, near Basingstoke, for **Pamber Prolific** 22705, born April 10, 1920, farrowed Jan. 5; *s.* Minley King 18364, *d.* Compton Guest 20188 *by* Manor Baronet 18978.
3451 **III. (£3.)**—James Nagle, for **Pamber Propagation** 22706, born April 10, 1920, farrowed Jan. 2; *s.* Minley King 18364, *d.* Compton Guest 20188 *by* Manor Baronet 18978.
3449 **R. N.**—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, for **Iwerne Virtue.**
H. C.—3443, 3454. **C.**—3442, 3444.

Class 360.—*Berkshire Sows, born in* 1921, *before July* 1.

3460 **I. (£10, R. N. for Champion,[2] R. N. for Champion,[3] & Champion.[1])**—L. Harrison & Co., Ltd., Pedigree Live Stock Farms, Coolham, Sussex, for **Miss Dainty,** born March 17, bred by J. Fricker, Marsh Farm, Stalbridge; *s.* Manor Buckmaster 22554, *d.* Princess Royal 5th 19695 *by* Motcombe Cognac 16605.
3463 **II. (£5.)**—James Ismay, Iwerne Minster House, Blandford, for **Iwerne Best of All** 25779, born March 1; *s.* Hurry On 19635, *d.* Iwerne Miss Minister 18975 *by* Iwerne Topper 17715.
3474 **III. (£3.)**—W. Howard Palmer, Stokes Farm, Wokingham, for **Murrell Perfection,** born March 10; *s.* Murrell Prince 20332, *d.* Murrell Minnie 21907 *by* Minley King 18364.
3472 **R. N.**—James Nagle, Pamber Place, Charter Ley, near Basingstoke, for **Pamber Golden Melody.**
H. C.—3455, 3459. **C.**—3467, 3475.

Class 361.—*Berkshire Sows, born in* 1921, *on or after July* 1.[4]

3482 **I. (£10.)**—Julius Fricker, Marsh Farm, Stalbridge, Dorset, for **Suddon Bridget** 25999 born July 3; *s.* Suddon Kingmaker 25998, *d.* Eaton Sunrise 23230 *by* War Loan 19694.
3489 **II. (£5.)**—James Ismay, Iwerne Minster House, Blandford, for sow born Sept. 2; *s.* Hurry On 19635, *d.* Basildon Kernel 20725 *by* Goldicote Rob 20126.
3500 **III. (£3.)**—Captain Waring, Beenham House, Berkshire, for **Beenham Joffrina 2nd** 26175, born Aug. 26, bred by George W. Layley, Hillfort Farm, Beenham, Berks; *s.* Murrell Puzzle 24033, *d.* Joffrina 19216 *by* Hugo 17838.
3487 **R. N.**—L. Harrison & Co., Ltd., Coolham, Sussex, for **Peel Beauty 3rd.**
H. C.—3495, 3496, 3497. **C.**—3483, 3485.

Class 362.—*Three Berkshire Sows, born in* 1922.

3514 **I. (£10.)**—W. H. Sherriff, Ascots, Hatfield, Herts, for sows born Jan. 7; *s.* Loyal Volunteer 20983, *d.* Ascots Belle 21772 *by* Bright Boy 20096.
3507 **II. (£5.)**—James Ismay, Iwerne Minster House, Blandford, for sows born Jan. 2; *s.* Hurry On 19635, *d.* Land Girl 2nd 22124 *by* Braishfield Buck 19909.
3508 **III. (£3.)**—Lady Lugard, Little Parkhurst, Abinger Common, Dorking, for sows born Jan. 6; *s.* Abinger Pioneer 25243, *d.* Abinger Pretty 23718 *by* Kingstone Peacemaker 21339.
3505 **R. N.**—Julius Fricker, Marsh Farm, Stalbridge, Dorset.
H. C.—3516. **C.**—3509.
Cup.[5]—W. Howard Palmer, Stokes Farm, Wokingham.
R. N. for Cup.[5]—James Nagle, Charter Ley, near Basingstoke.

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[1] Champion Prize of £5 5*s.* given by the British Berkshire Society for the best Berkshire Sow in Classes 359–361.

[2] Champion Prize of £10 10*s.* given by the British Berkshire Society for the best Berkshire Boar or Sow in Classes 355–361. A Gold Medal was given by the British Berkshire Society to the Breeder of this Champion Pig.

[3] The "Eaton" Silver Challenge Cup, value Fifty Guineas, given through the British Berkshire Society for the best Boar or Sow in Classes 355–361.

[4] Prizes given by the British Berkshire Society.

[5] The "Berkshire" Silver Challenge Cup, value £20, given by the British Berkshire Society for the most points awarded in a combination of entries in Classes 355–362 on the basis of: Four points for a first prize, three points for a second prize, two points for a third prize, one point for a fourth prize, two points for a Championship, and one point for a Reserve or a Championship.

Large Blacks.

Class 363.—*Large Black Boars, born in or before* 1920.

3532 **I. (£10.)**—Terah F. Hooley, Dry Drayton, near Cambridge, for **Fentongollan Result** 9585, born Sept. 13, 1918, bred by W. L. Hosking & Sons, Fentongollan, Cornwall; *s.* Treveglos Leader 3rd 6015, *d.* Treveglos Smiling Lady 3rd 20850 *by* Valley None Such 5401.

3543 **II. (£5.)**—H. G. Spicer, 20, Old Queen Street, Westminster, S.W., for **Streetly Orpheus** 17391, born May 28, 1920, bred by S. Owen Webb, Streetly Hall, West Wickham, Cambs; *s.* Streetly Marvel 12603, *d.* Docking Opaque 36728 *by* Cleave Perfection 5801.

3533 **III. (£3.)**—Terah F. Hooley, for **Tiptree Conserve** 16547, born March 30, 1920, bred by Wilkin & Sons, Ltd., Tiptree, Essex; *s.* Bassingbourn Tiptree 7893, *d.* Tiptree 164th 27832 *by* Tiptree War Bread 7151.

3546 **R. N.**—Thomas Warne, Trevisquite Manor, St. Mabyn, for **Trevisquite Sale Day.**
H.C.—3521. **C.**—3524, 3530.

Class 364.—*Large Black Boars, born in* 1921, *before July* 1.[1]

3560 **I. (£10, & R. N. for Champion.[2])**—Terah F. Hooley, Dry Drayton, near Cambridge, for **Drayton Result** 21595, born April 3; *s.* Fentongollan Result 9585, *d.* Testerton Careful 21420 *by* Docking Athlete 7321.

3573 **II. (£5.)**—John Warne, Tregonhayne, Grampound Road, Cornwall, for **Treveglos Laddie 3rd** 17827, born Jan. 3; *s.* Treveglos Chum 2nd 14787, *d.* Treveglos Lass 19th 23870 *by* Valley None Such 5401.

3567 **III. (£3.)**—John Park, The Grange, Egginton, Derby, for **Pooley Paddy** 18161, born Jan. 23, bred by Pooley Hall Colliery Co., Polesworth, Tamworth; *s.* Trevisquite Padstonian 7973, *d.* Drayton Model 1st 33904 *by* Drayton Moonlighter 8527.

3568 **R. N.**—Alfred Playle, Bassingbourn, Cambs, for **Luffenhall Saladin.**
H. C.—3572. **C.**—3558, 3566.

Class 365.—*Large Black Boars, born in* 1921 *on or after July* 1.[1]

3581 **I. (£10, & Champion.[2])**—John H. Glover, Cornwood, Devon, for **Cornwood Someday** 20623, born July 3; *s.* Cornwood Marvel 15831, *d.* Tinten Nancy 37440 *by* Cornwood King John 8271.

3587 **II. (£5.)**—Terah F. Hooley, Dry Drayton, near Cambridge, for **Cornwood Doonard** 20621, born July 3, bred by J. H. Glover, Cornwood, Devon; *s.* Cornwood Marvel 15831, *d.* Tinten Nancy 37440 *by* Cornwood King John 8271.

3589 **III. (£3.)**—W. C. Jackson, Fowlmere, Cambs, for **Fowlmere Marvel 2nd** 22215, born July 25; *s.* Streetly Marvel 12603, *d.* Docking Spangle 32560 *by* Tartar President 2nd 8835.

3606 **R. N.**—F. B. Wilkinson, Cavendish Lodge, Edwinstowe, Newark, for **Edwinstowe Nimrod 1st.**
H. C.—3580. **C.**—3585, 3594, 3597.

Class 366.—*Large Black Boars, born in* 1922.

3639 **I. (£10.)**—John H. Glover, Cornwood, Devon, for **Cornwood Philip** 21697, born Jan. 2; *s.* Witham Tiptree 1st 11103, *d.* Cornwood Lass 55th 25730 *by* Alford Victor 2nd 6841.

3647 **II. (£5.)**—Terah F. Hooley, Dry Drayton, near Cambridge, for **Drayton Dixie 1st** 22193, born Jan. 15; *s.* Menna Sunstar 16039, *d.* Drayton Lucena 1st 78348 *by* Drayton Democrat 11613.

3640 **III. (£3.)**—G. A. Goodchild, Great Yeldham, Essex, for **Tartar Agitation,** born Jan. 2; *s.* Kedington Embargo 17605, *d.* Tartar Queen 21st 61248 *by* Lambourne Paragon 11717.

3631 **R. N.**—E. W. Edwards, Pednor House, Chesham, Bucks.
H. C.—3620, 3641. **C.**—3653, 3654, 3664.

Class 367.—*Large Black Breeding Sows, born in or before* 1920.

3722 **I. (£10, & Champion.[3])**—Walter J. Warren, Deacons Farm, Staplegrove, Taunton, for **Kibbear Lady Allies** 17246, born May 6, 1916, farrowed Jan. 16; *s.* Drayton Disappointment 2nd 4573, *d.* Kibbear Lady Annie 14050 *by* Cornwood Magistrate 4271.

3698 **II. (£5.)**—G. A. Goodchild, Great Yeldham, Essex, for **Tartar Princess 61st** 15632, born Feb. 4, 1915, farrowed Jan. 26; *s.* Kibben John 1st 5391, *d.* Tartar Princess 60th 12226 *by* Bentley Budget 3035.

3721 **III. (£3.)**—John Warne, Tregonhayne, Grampound Road, Cornwall, for **Bonyalva Matchless 21st** 30350, born April 15, 1919, farrowed Jan. 10, bred by H. R. Lucas, Bonyalva, St. Germans; *s.* Primley Henry 5513, *d.* Bonyalva Matchless 3rd 16080 *by* Treveglos Thunderbolt 2nd 3427.

3709 **R. N.**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Testerton Dorcas.**
H. C.—3701, 3702 3704, 3705, 3708. **C.**—3694, 3695, 3720.

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[1] Prizes given by the Large Black Pig Society.

[2] Champion Prize of £10 given by the Large Black Pig Society for the best Boar in Classes 363–366.

[3] Silver Challenge Cup, value Twenty Guineas, given by the Large Black Pig Society for the best Sow in Classes 367–369.

Class 368.—*Large Black Sows, born in* 1921, *before July* 1.

3749 **I.** (£10)—Terah F. Hooley, Dry Drayton, near Cambridge, for **Drayton Content 3rd.** 63072, born Feb. 3; *s.* Wintringham Premier 11455 *d.* Trevisquite Hatfield 21234 *by* Boss of the Valley 3855.

3766 **II.** (£5.)—A. Beverley Ringer, Mere House, Seething, Brooke, Norwich, for **Swardeston Hope** 59460, born Jan. 20; *s.* Valley Good Boy 13733, *d.* Drayton Garbitas 2nd 33786 *by* Loughton Marvel 4437.

3775 **III.** (£3.)—Stanley A. Stimpson, Bixley, Norwich, for **Bixley Darling 4th** 61064, born Jan. 1; *s.* Bixley Westwood 10065, *d.* Eldo Darling 24110 *by* Tartar Lord 7073.

3760 **R. N.**—The Exors. of the late Lord Manton, Sudbourne Hall, Orford, Suffolk, for **Sudbourne Sadie A.**

H. C.—3724, 3733, 3742, 3768, 3770. **C.**—3764, 3769.

Class 369.—*Large Black Sows, born in* 1921, *on or after July* 1.[1]

3803 **I.** (**£10, & R. N. for Champion.**[2])—John H. Glover, Cornwood, Devon, for **Cornwood Lass 62nd** 72448, born July 3; *s.* Cornwood Marvel 2nd 15831, *d.* Tinten Nancy 37440 *by* Cornwood King John 8271.

3794 **II.** (£5.)—F. P. Brown, Kingston Farm, Chillerton, Isle of Wight, for **Kingston Gem** 80720, born Aug. 2; *s.* Trevisquite Surprise 9583, *d.* Kingston Blanche 27276 *by* Drayton Kingston 6963.

3820 **III.** (£3.)—Alfred Playle, Bassingbourn, Cambs, for **Bassingbourn Lady Nora** 79678, born July 8; *s.* Kedington Ringleader 15851, *d.* Bassingbourn Countess 1st 20832 *by* Cleave General 6367.

3815 **R. N.**—Henry J Kingwell, Bow Grange, Totnes, for **Brent Sunflower.**

H. C.—3789, 3790, 3791, 3816, 3830. **C.**—3799, 3821.

Class 370.—*Three Large Black Sows, born in* 1922.

3852 **I.** (£10.)—A. Dyson Laurie, Homefield, Sevenoaks, for **Maxwelltoun Lassie 42nd** 78134, **Maxwelltoun Lassie 43rd** 78136 and **Maxwelltoun Lassie 44th** 78138, born Jan. 12; *s.* Tinten King John 2nd 12489, *d.* Maxwelltoun Lassie 16th 44466 *by* Vahan Troublesome 10191.

3842 **II.** (£5.)—Terah F. Hooley, Dry Drayton, near Cambridge, for **Drayton Faithful** 80212, **Drayton Hopeful** 80214 and **Drayton Cheerful** 80216, born Jan. 4; *s.* Fentongollan Result 9585, *d.* Drayton Lonesome 47470 *by* Wintringham Premier 11455.

3833 **III.** (£3.)—William Bracey, Manor House, Martham, Gt. Yarmouth, for **Martham Dorothy** 81152, **Martham Winifred** 81154 and **Martham Ladylike** 81156, born Jan. 8; *s.* Martham What's Wanted 15283, *d.* Tinten Ladylike 37442 *by* Cornwood King John 8271.

3862 **R. N.**—John Warne, Tregonhayne, Grampound Road, Cornwall, for **Treveglos Levelsides 5th, Treveglos Levelsides 6th,** and **Treveglos Levelsides 7th.**

H. C.—3840, 3858, 3863, 3864. **C.**—3834, 3850.

Gloucestershire Old Spots.[3]

Class 371.—*Gloucestershire Old Spots Boars, born in or before* 1920.

3869 **I.** (**£10, Champion,**[4] **& Champion.**[5])—John Douglas, 142, Hanham Road, Kingswood, Bristol, for **Woodstock Edwin** 3335, born March 6, 1920; *s.* Ithells Hero 2078, *d.* Woodstock Alice 5962 *by* Shipway Prince 284.

3880 **II.** (£5.)—C. W. Tindall, Park House, Louth, Lincolnshire, for **Kitesnest Actor** 2759, born Jan. 2, 1920, bred by F. H. Rea, Kitesnest Farm, Wooton-under-Edge, Glos.; *s.* Clevehill Actor 664, *d* Kitesnest Judy 2nd 417 *by* Bradley Pride 123.

3885 **III.** (£3.)—Yarnold Bros., Eastham Park, Tenbury Wells, for **Fairfield Famous 2nd** 3670, born Feb. 28, 1920, bred by J. B. Dowding, Fairfield, Leominster; *s.* Clapcote Ben 372, *d.* Hellens Emigrant 822 *by* Lower Stone Hero 269.

3874 **R. N.**—Major Herbert Musker, Rushford Hall, Thetford, for **Gilslake Bachelor.**

H. C.—3871.

Class 372.—*Gloucestershire Old Spots Boars, born in* 1921, *before July* 1.

3887 **I.** (**£15, & R. N. for Champion.**[4])—Stanley H. Badcock, Holmwood, Westbury-on-Trym, Bristol, for **Holmwood Dauntless** 4275, born March 7; *s.* Ashton Bloomer 1741, *d.* Clevehill Beauty 11327 *by* Sultan 4th of Hollywood Tower 1461.

3891 **II.** (£10.)—H. Francis & Son, Summerleaze, East Knoyle, Salisbury, for **Dorset Diver** 4401, born Jan. 1; *s.* Clapcote Bob 373, *d.* Gribton Jilt 1227 *by* Kitesnest Recruiter 221.

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[1] Prizes given by the Large Black Pig Society.

[2] Silver Challenge Cup, value Twenty Guineas, given by the Large Black Pig Society for the best Sow in Classes 367–369.

[3] £106 towards these Prizes were given by the Gloucestershire Old Spots Pig Society.

[4] Silver Challenge Cup, value Twenty Guineas, given through the Gloucestershire Old Spots Pig Society for the Best Boar in Classes 371–374.

[5] Silver Challenge Cup, value Forty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Boar or Sow in Classes 371–377.

3895 III. (£5.)—Tom Wells, The Manor, Galphay, near Ripon, for **Galphay Mick,** born May 17; *s.* Sporting Major 1633, *d.* Galphay Best Girl 7953 *by* Croxton Fickle Boy 803.

3890 R. N.—P. Webster Cory, The Manor Farm, Notgrove, near Bourton-on-the-Water, Glos, for **Windrush Colonel.**

Class 373.—*Gloucestershire Old Spots Boars, born in* 1921, *on or after July* 1.

3901 I. (£12.)—Mrs. G. M. Lloyd, Croydon, Royston, Herts, for **Bromley Patrick** 4206, born July 13, bred by the Rev. W. V. Chilwell, King's Bromley Vicarage, Lichfield; *s.* Gilslake Sportsman 2597, *d.* Withybrook Primrose 2nd 5715 *by* Kendalshire Warrior 2nd 384.

3899 II. (£8.)—T. King, Lower Barnes, Wotton-under-Edge, Glos., for **White House Duke** 4293, born Oct. 6, bred by F. E. Exell, White House Farm, Cam, Glos.; *s.* Arlingham Noble 1714, *d.* White House Janet 9452 *by* Hodgecombe Jim 1023.

3898 III. (£5.)—Sir F. Hervey-Bathurst, Bt., D.S.O., Somborne Park, Stockbridge, Hants, for **Somborne Masterpiece** 4321, born July 15; *s.* Hodgecombe Hero 2016, *d.* Langford Amelia 4690 *by* Langford Noble 815.

3897 R. N.—Sir John Anderson, Bt., Harrold Priory, Sharnbrook, Beds, for **Bromley Peter.**

Class 374.—*Gloucestershire Old Spots Boars, born in* 1922.

3923 I. (£12.)—Herbert James Staff, Hall Farm, Redgrave, Diss, Norfolk, for **Rushford Game Boy,** born Feb. 7; *s.* Gilslake Bachelor 2819, *d.* Redgrave Graceful 5423 *by* Bounds Apple 991.

3921 II. (£8.)—F. H. Rea, Kitesnest Farm, near Wotton-under-Edge, Glos, for **Kitesnest John,** born Feb. 10; *s.* Kitesnest Conqueror 4274, *d.* Kitesnest Jill 10728 *by* Ithells Champion 2080.

3925 III. (£5.)—Tom Wells, The Manor, Galphay, near Ripon, for **Galphay Bill,** born Jan. 7; *s.* Ithells Major 6th, *d.* Galphay Beauty *by* Sporting Major 1633.

3912 R. N.—H. Francis & Sons, Summerleaze, East Knoyle, Salisbury, for **Dorset Dictator.**
H. C.—3924.

Class 375.—*Gloucestershire Old Spots Breeding Sows, born in or before* 1920.

3946 I. (£10, R. N. for Champion,[1] & Champion.[2])—Herbert James Staff, Hall Farm, Redgrave, Diss, Norfolk, for **Braziers Annex,** born June 10, 1920, farrowed April 27; bred by J. Noble, Bacton, Suffolk; *s.* Pitsford Woodman, 1374 *d.* Braziers Annecy 3695 *by* Beccles Commander 742.

3936 II. (£5.)—Miss B. G. Cory-Wright, Ayot Place, Welwyn, Herts, for **Croxton Fiction 16th** 7340, born Feb. 10, 1920, farrowed Feb. 9, bred by J. Gibson Whittles, The Mount, Croxton, Staffs; *s.* Hobwell Monarch 1028, *d.* Langstone Fiction 944 *by* Berkeley Masterpiece 197.

3942 III. (£3.)—Oliver W. Porritt, Hotchley Farm, East Leake, Loughborough, for **Frampton Anne** 10191, born May 26, 1920, farrowed Jan. 17, bred by C. E. Williams, Frampton-on-Severn; *s.* Patchway Marvel 1234, *d.* Wilston Lady 3747 *by* Kitesnest Warrior 606.

3933 R. N.—Miss A. J. Behrens, Ripple Hall, Tewkesbury, for **Coleshill Countess 7th.**
H. C.—3944. C.—3935, 3947.

Class 376.—*Gloucestershire Old Spots Sows, born in* 1921, *before July* 1.

3960 I. (£15.)—H. Francis & Sons, Summerleaze, East Knoyle, Salisbury, for **Dorset Spot** 14221, born Jan. 1; *s.* Clapcote Bob 373, *d.* Gubton Jilt 1227 *by* Kitesnest Recruiter 221.

3972 II. (£10.)—Herbert James Staff, Hall Farm, Redgrave, Diss, Norfolk, for **Redgrave Jewess 1st** 14813, born Jan. 4; *s.* Patchway Monarch 1233, *d.* Williamstrip Janet 2nd *by* Williamstrip King William 8.

3963 III. (£5.)—Henry Matthews, Down Farm, Winterbourne, near Bristol, for **Thornbury Buckle** 13721, born June 24, bred by Bennett and Howard, Thornbury, Glos; *s.* Ashton Bloomer 1741, *d.* Thornbury Bint 8942 *by* Gilslake Admiral 907.

3950 R. N.—E. T. Addams-Williams, The Knowle, Monmouth, for **Knowle Ivy.**
H. C.—3971. C.—3973.

Class 377.—*Gloucestershire Old Spots Sows, born in* 1921, *on or after July* 1.

3983 I. (£12, & R. N. for Champion.[2])—Alfred Rooksby, Litchard Hall, Bridgend, for **Micheltroy Magic** 13425, born July 20, bred by F. G. Jones, Micheltroy, Monmouth; *s.* Birdlip Boss 1675, *d.* Wye Monow 8302 *by* Stoke Courcy Harry 1004.

3977 II. (£8.)—Miss B. G. Cory-Wright, Ayot Place, Welwyn, Herts, for **Bromley Columbine,** born July 13, bred by the Rev. W. V. Chilwell, King's Bromley Vicarage, Lichfield; *s.* Gilslake Sportsman 2597, *d.* Withybrook Primrose 2nd 5715 *by* Kendalshire Warrior 2nd 384.

3984 III. (£5.)—William F. Werrett, Marlpool Farm, Breadstone, near Berkeley, Glos., for **Marlpool Daisy** 14704, born Aug. 1; *s.* Ithells Champion 2nd 8338, *d.* Lorridge Daisy 3rd 9105 *by* Pedington Prince 1581.

3975 R. N.—Sir John Anderson, Bt., Harrold Priory, Sharnbrook, Beds, for **Sonderna Sweetbrier 1st.**
H. C.—3976. C.—3974.

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[1] Silver Challenge Cup, value Forty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Boar or Sow in Classes 371–377.

[2] Silver Challenge Cup, value Twenty Guineas, given through the Gloucestershire Old Spots Pig Society for the best Sow in Classes 375–377.

Class 378.—*Three Gloucestershire Old Spots Sows, born in* 1922.

3988 **I. (£12.)**—H. FRANCOIS & SONS, Summerleaze, East Knoyle, Salisbury, for **Dorset Surprise, Dorset Perfection** and **Dorset Satisfaction,** born Jan. 4; *s.* **Leazow Jostler 3364,** *d.* Gribton Jilt 1227 *by* Kitesnest Recruiter 212.

3994 **II. (£8.)**—SHERRIFF & SONS, Lemsford, Hatfield, for **Nashes Blossom 1st, Nashes Blossom 2nd** and **Nashes Blossom 3rd,** born Jan. 2; *s.* Nashes Duke 1st 3068, *d.* Hobwell Blossom 3rd 2522 *by* Oldbury Prince 29.

3986 **III. (£5.)**—E. T. ADDAMS-WILLIAMS, The Knowle, Monmouth, for **Knowle Pansy** 15291, **Knowle Poppy** 15292, and **Knowle Primrose** 15293, born Jan. 25; *s.* Dumbleton Count 3237, *d.* Hill House Joan *by* Leigh Delamere Jester 1320.

3993 **R. N.**—F. H. REA, Kitesnest Farm, near Wotton-under-Edge, Glos., for **Kitesnest Jill 3rd, Kitesnest Jill 4th** and **Kitesnest Jill 5th.**
C.—3989.

Lincolnshire Curly-Coated.

Class 379.—*Lincolnshire Curly-coated Boars, born in or before* 1921.

4000 **I. (£10, & Champion.[1])**—WILLIAM PICKWORTH, Century Farm, Whaplode, Holbeach, for **Whaplode Recruit 1st** 4593 (T.N. 268), born April 14, 1920, bred by Joseph Waltham, Manor House, Fleet; *s.* Deeping Royal 4115, *d.* Moulton Lily *by* Wigtoft Forerunner 3795.

4003 **II. (£5.)**—GERSHOM SIMPSON, Carmay, Caythorpe, Lowdham, Notts, for **Charnwood Champion** 4441 (T.N. 829), born March 13, 1920; *s.* Wigtoft Charnwood 4361, *d.* Charnwood Countess 2nd 11884 *by* Charnwood Duke 4th 4037.

3997 **R. N.**—FREDERICK E. BOWSER, Wigtoft, Boston, Lincs, for **Wigtoft Superior.**
H. C.—3999. **C.**—4002.

Class 380.—*Lincolnshire Curly-Coated Boars, born in* 1922.[2]

4006 **I. (£10, & R. N. for Champion.[1])**—HAROLD H. BOWSER, The Holmes, Kirton Holme Boston, Lincs., for boar, born Jan. 2; *s.* Carrington Grange Mascot 2nd 4287, *d.* Charnwood Duchess 32nd 12024 *by* Wigtoft Charnwood 4361.

4009 **II. (£5.)**—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping Twenty 5th,** born Jan. 20, bred by F. Richardson, Bourne Fen, Bourne; *s.* Deeping Royal 1st 4153, *d.* Twenty Violet *by* Deeping Bold King 4087.

4008 **R. N.**—GEORGE FREIR, for **Deeping Ashleaf 1st.**
H. C.—4011, 4012.

Class 381.—*Lincolnshire Curly-Coated Breeding Sows, born in or before* 1920.

4015 **I. (£10, & Champion.[3])**—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping Lady 1st,** born Jan. 3, 1920, farrowed Jan. 25; *s.* Deeping East Kirkby 4113, *d.* Deeping Marshland 10808 *by* Bold King 2807.

4013 **II. (£5.)**—WILLIAM ABBOTT, Swaton, Billingborough, Lincs, for **Bold Abbottess 3rd** (T.N. 11.19), born in Jan., 1919, farrowed Jan. 11; *s.* Curly Marcham 7th, *d.* Bold Abbottess 2nd 13580 *by* Alvingham King 4th 2023.

4018 **R. N.**—W. R. WILLIAMSON, Vine Cottage, West Banks, Sleaford, for **Slinford Painted Lady.**
H. C.—4014.

Class 382.—*Lincolnshire Curly-Coated Sows, born in* 1921.

4027 **I. (£10, & R. N. for Champion.[3])**—GERSHOM SIMPSON, Carmay, Caythorpe, Lowdham Notts., for **Charnwood Jewel 26th** (T.N. 803), born Jan. 4; *s.* Wigtoft Charnwood 4361, *d.* Charnwood Jewel 15th 11890 *by* Keal Dick 3801.

4023 **II. (£5.)**—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for **Deeping Countess 2nd,** born Jan. 10, bred by F. Richardson, Bourne Fen, Bourne; *s.* Deeping Royal 1st 4153, *d.* Twenty Violet *by* Deeping Bold King 4087.

4022 **R. N.**—F. J. CAUDWELL, Manor House, Sibsey, Boston, Lincs., for **Midville Lass.**
H. C.—4019, 4024.

Class 383.—*Three Lincolnshire Curly-Coated Sows, born in* 1922.

4031 **I. (£10.)**—F. J. CAUDWELL, Manor House, Sibsey, Boston, Lincs., for **Midville Madam 2nd, 3rd and 4th,** born Jan. 26; *s.* Carrington Majestic 4281, *d.* Midville Madam 12056 *by* Burton Last 4185.

4030 **II. (£5.)**—HAROLD H. BOWSER, The Holmes, Kirton Holme, Boston, Lincs., for sows, born Jan. 2; *s.* Carrington Grange Mascot 2nd 4287, *d.* Charnwood Duchess 42nd 12024 *by* Wigtoft Charnwood 4361.

4032 **R. N.**—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding.
H. C.—4028.

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[1] Champion Prize of £5 5*s*. given by the Lincolnshire Curly-Coated Pig Breeders' Association for the best Boar in Classes 379 and 380.

[2] Prizes given by the Lincolnshire Curly-Coated Pig Breeders' Association.

[3] Champion Prize of £5 5*s*. given by the Lincolnshire Curly-Coated Pig Breeders' Association for the best Sow in Classes 381 and 382.

Cumberland.[1]

Class 384.—*Cumberland Boars, born in or before* 1921.

4041 **I. (£10.)**—JOHN STEEL, M.R.C.V.S., Southley, Wigton, for **Royal** 1254 (T.N.A.1), born May 7, 1919, bred by Albert P. Skelton, High Longthwaite, Wigton ; *s.* **Tristram Shandy** 429, *d.* Susan 1592 *by* Solway Pride 64.

4035 **II. (£5.)**—AUBREY W. HANDY, Haycroft, Sherborne, Northleach, for **River Majestic**, born Oct. 1, 1921 ; *s.* Sir Roger 1861, *d.* Flase Pease 2192 *by* Armistice 1177.

4036 **R. N.**—JOHN S. JORDAN, Bowston, Kendal, for **Parton Height.**

Class 385.—*Cumberland Boars, born in* 1922.[1]

4044 **I. (£10.)**—JOHN STEEL, M.R.C.V.S., Southley, Wigton, for **Southley Golden Gain** (T.N.D. 11), born Jan. 28 ; *s.* Gold Mine 1768, *d.* Southley Bloom 2693 *by* Tristram Shandy 429.

4043 **II. (£5.)**—JOHN S. JORDAN, Bowston, Kendal, for boar (T.N.D. 15) born March 6 ; *s.* Philip of Fauld 1834, *d.* Bowston Wonder 2nd *by* Armistice 1177.

4045 **R. N.**—JOHN STEEL, M.R.C.V.S., for **Southley Good Gift.**

Class 386.—*Cumberland Breeding Sows, born in or before* 1920.

4050 **I. (£10.)**—JOHN STEEL, M.R.C.V.S., Southley, Wigton, for **Conceit** 1600 (T.N.A. 5), born Jan. 26, 1919, farrowed Feb. 15 ; *s.* His Nibs 696, *d.* Giddy Girl 608 *by* Oughterside 57.

4049 **II. (£5.)**—PHILIP I. PEASE, Sledwich, Barnard Castle, for **Skelton Beauty** 1633 (T.N. 34 A1), born Feb. 4, 1919, farrowed March 18, bred by J. Carr, Mansion House, Kirkbride ; *s.* Lord Roches 702, *d.* Jinny of the Mansion House *by* Longthwaite Jock.

4051 **R. N.**—JOHN STEEL, M.R.C.V.S., for **Southley Bloom.**

Class 387.—*Cumberland Sows, born in* 1921.

4052 **I. (£10.)**—SIR JOHN ANDERSON, BT., Dykehead Farm, Blackford, Carlisle, for **Bowston Perfection** (T.N. C18), born Feb. 2, bred by J. S. Jordan, Bowston, Kendal ; *s.* Armistice 1177, *d.* Skelton Sally 1634 *by* Lord Roches 702.

4053 **II. (£5.)**—JOHN S. JORDAN, Bowston, Kendal, for **Barclose Orphan Girl** (T.N. C1), born Feb. 2, bred by J. J. Wilson, Barclose, Scaleby ; *s.* Parton Height 1242, *d.* Barclose Ideal 652 *by* Laversdale Monarch 43.

4055 **R. N.**—JOHN STEEL, M.R.C.V.S., Southley, Wigton, for **Giddy Girl 2nd.**

Class 388.—*Three Cumberland Sows, born in* 1922.

4058 **I. (£10.)**—JOHN STEEL, M.R.C.V.S., Southley, Wigton, for **Southley Silver Urn, Southley Soubrequet,** and **Southley Silver Corn,** born Jan. 28 ; *s.* Gold Mine 1768, *d.* Southley Bloom 2693 *by* Tristram Shandy 429.

4057 **II. (£5.)**—JOHN S. JORDAN, Bowston, Kendal, for sows born Feb. 20 ; *s.* Philip of Fauld 1834, *d.* Skelton Sally 1634 *by* Lord Roches 702.

Wessex Saddlebacks.

Class 389.—*Wessex Saddleback Boars, born in or before* 1920.

4060 **I. (£10.)**—SIR W. G. WATSON, BT., Sulhampstead Park, near Reading, for **Ashe Hero 2nd** 420, born Aug. 6, bred by T. L. Martin, Ashe Warren House, Overton, Hants ; *s.* Caer Augustus Snodgrass 228, *d.* Norman Node 318 *by* Norman Hero 27.

4059 **II. (£5.)**—ROBERT E. PARKER, Easton, Norwich, for **Easton Landsman** 305, born Feb. 8 ; *s.* Easton Emperor 156, *d.* Easton Sanderling 128 *by* Caer Sally Brass 75.

Class 390.—*Wessex Saddleback Boars, born in* 1921, *before July* 1.[2]

4063 **I. (£10, & R. N. for Champion.[3])**—H. G. LAKIN, Pipers Hill, near Leamington, for **Sherfield Shackleton** 815, born March 19, bred by V. W. Hacker, Sherfield English, Romsey, Hants ; *s.* Hollbury Lancer 190, *d.* Sherfield Sister Sunset 422 *by* Caer Kingmaker 9.

4064 **II. (£5.)**—MALDEN-OAKLEY PIG HERD CO., LTD., Polhampton, Overton, Hants., for **Norman Polham** 661, born Jan. 25, bred by William G. Singer, Norman Court, Salisbury ; *s.* Norman Obelisk 300, *d.* Norman Empress 45.

4066 **R. N.**—T. L. MARTIN, Ashe Warren House, Overton, Hants, for **Ashe Plant 2nd.**

H. C.—4061.

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[1] Prizes given by the Cumberland Pig Breeders' Association.

[2] Prizes given by the Wessex Saddleback Pig Society.

[3] Silver Challenge Cup, value Fifty Guineas, given by the Wessex Saddleback Pig Society for the best Boar or Sow in Classes 389-395. A Silver Medal is given by the Wessex Saddleback Pig Society to the Breeder of the Champion Pig.

Class 391.—*Wessex Saddleback Boars, born in* 1921, *on or after July* 1.[1]

4071 I. (£10.)—Lt-Col. E. C. M. Phillips, D.S.O., Earlshill House, Royston, for **Ayot Roamer** 1110, born Sept 10, bred by G. A. Baron, Welwyn, Herts; *s.* Norman King Offa 2619, *d.* Purbek Emily 1396 *by* Cattistock Best Born 87.

4070 II. (£5.)—Mrs. O. M. Hudson and H. E. Peach, Beck Hall, Billingford, Elmham Norfolk, for **Harpenden Prime** 932, born Aug. 1, bred by Dolphin Smith, Mackrey End Harpenden; *s.* Burcombe Hero 320, *d.* Valuation 2125 *by* Somerley Dreadnought 30

Class 392.—*Wessex Saddleback Boars, born in* 1922.

4081 I. (£10.)—T. L. Martin, Ashe Warren House, Overton, Hants, for **Ashe Major 1st,** born Jan. 6; *s.* Ashe Mac 2nd 680, *d.* Ashe Nadine 1st 3245 *by* Cattistock Norman 6.

4075 II. (£5.)—Misses F. E. Donisthorpe and G. de Montgeon, Eastington Hall, Upton-on-Severn, for **Eastington Saturn** 1206, born Jan. 15; *s.* Eastington Rowan 735, *d.* Eastington Sappho 273.

4084 R. N.—Lt.-Col. E. C. M. Phillips, D.S.O., Earlshill House, Royston, for **Royston Crow**.

Class 393.—*Wessex Saddleback Breeding Sows, born in or before* 1920.

4096 I. (£10.)—Lt.-Col. E. C. M. Phillips, D.S.O., Earlshill House, Royston, for **Norman Node** 318, born March 23, 1919, farrowed Jan. 2, bred by W. M. G. Singer, Norman Court, Salisbury; *s.* Norman Hero 27, *d.* Norman Empress 45.

4094 II. (£5.)—T. L. Martin, Ashe Warren House, Overton, Hants, for sow born Feb. 16, 1920, farrowed April 18, bred by E. Hardiman, Salisbury; *s.* Fifield First 42.

4092 R. N.—Mrs. O. M. Hudson and H. E. Peach, Beck Hall, Billingford, Elmham, Norfolk, for **Brixworth May Queen.**

Class 394.—*Wessex Saddleback Sows, born in* 1921, *before July* 1.[1]

4106 I. (£10, & Champion.[2])—T. L. Martin, Ashe Warren House, Overton, Hants, for **Ashe Mercy 2nd** 2638, born Feb. 2; *s.* Holbury Lancer 190, *d.* Ashe Mercy 243 *by* Melchet Cooper 2.

4101 II. (£5.)—Misses F. E. Donisthorpe and G. de Montgeon, Eastington Hall, Upton-on-Severn, for **Haydwood Favourite 3rd** 3177, born March 16, bred by Osment Brothers, Lydeard St. Lawrence, Taunton; *s.* Pearash Luther 332, *d.* Haydwood Favourite 2nd 928.

4111 R. N.—Mrs. E. Turner, Shipton Oliffe Manor, Andoversford, for **Offa Mona.**

Class 395.—*Wessex Saddleback Sows, born in* 1921, *on or after July* 1.[1]

4116 I. (£10.)—Sawyer Clarke, Place Farm, Hadleigh, Suffolk, for **Hadleigh Millicent** 4120, born July 3; *s.* Dunham Kingfisher 363, *d.* Hadleigh Marchioness 2565 *by* Ringshall Surprise 135.

4121 II. (£5.)—Douglas Vickers, Temple Rinsley, Hitchin, for **Offa Lucella 3761,** born Aug. 16, bred by Stanley White, The Grange, Offley, Hitchin; *s.* Norman King Off. 219, *d.* Godwin of Offa 1633 *by* Rentpayer of Brighstone 149.

4119 R. N.—The Rt. Hon. Sir Alfred Mond, Bt., M.P., Melchet Court, Romsey, Hants, for **Melchet Nitrate 8th.**

Class 396.—*Three Wessex Saddleback Sows, born in* 1922.

4124 I. (£10.)—T. L Martin, Ashe Warren House, Overton, Hants, for **Ashe Eleanor 1st, 2nd and 3rd,** born Jan. 11; *s.* Ashe Plant 2nd 650, *d.* Eleanor of Ashe 1270.

4123 II. (£5.)—Malden-Oakley Pig Herd Co., Ltd., Polhampton, Overton, Hants,, for **Oakley Money** 4604, **Oakley Natty** 4605, and **Oakley Princess** 4598, born Jan. 10 and Jan. 26; *ss.* Wellow Duke 628 and Norman Polhorn 661, *ds.* Oakley Nancy 865 and Atholstone Princess 711.

4125 R. N.—T. L. Martin, for **Ashe Orchid 1st, Ashe Nadine 9th** and **Ashe Violet 7th.**

Essex.

Class 397.—*Essex Boars, born in or before* 1920.

4129 I. (£10.)—A. T. Greenslade, Little Walden Park, Saffron Walden, for **Killhogs Prince** 341, born Jan. 16, 1920, bred by W. Wells, Killhogs, Essex; *s.* Peace Cub 101.

4130 II. (£5.)—William Alfred Lyon, Foxton House, Foxton, near Royston, Herts, for **Easton Lodge Victor** 1755, born May 12, 1920, bred by the Countess of Warwick, Easton Lodge, Dunmow; *s.* Garrolds Chief 35, *d.* Broxted Fashion 5th.

Class 398.—*Essex Boars, born in* 1921.[3]

4138 I (£10.)—Edward H. Sikes, Fryerning Grange, Ingatestone, for **Fryerning Claudius 1st** 845, born May 30; *s.* Barnston Claudius 1st 7, *d.* Fryerning Flower 1470 *by* Rutland's Sultan 131.

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[1] Prizes given by the Wessex Saddleback Pig Society.

[2] Silver Challenge Cup, value Fifty Guineas, given by the Wessex Saddleback Pig Society for the best Boar or Sow in Classes 389-395. A Silver Medal is given by the Wessex Saddleback Pig Society to the Breeder of the Champion Pig.

[3] Prizes given by the Essex Pig Society.

4135 **II. (£5.)**—Kemsley and Kemsley, Great Wakering, Essex, for **Barling Tommy** 777, born June 4; *s.* Parsonage Premier, *d.* Chelmer Willingale 2nd 1278 *by* Chelmer Lord Warwick 23.

4131 **R. N.**—H. S. Ashton, Trueloves, Ingatestone, for **Trueloves Admiral 2nd.**

Class 399.—*Essex Boars, born in* 1922.

4146 **I. (£10.)**—Kemsley and Kemsley, Great Wakering, Essex, for **Barling Joey** 2078, born Jan. 12; *s.* Chelmer Brutus 235, *d.* Barling Keta 864 *by* Landwick King Arthur 57.

4153 **II. (£5.)**—R. Browning Smith, The Brook, Great Tey, Kelvedon, for **Brook Masterpiece 8th,** born Jan. 16; *s.* Brook Masterpiece 215, *d.* Brook Perfectus 4th 2912.

4154 **R. N.**—Alan R. Taylor, The Chantry, Ingatestone, for **Chantry Blanco.**

H. C.—4141. **C.**—4155.

Class 400.—*Essex Breeding Sows, born in or before* 1920.

4164 **I. (£10, & R. N. for Champon[1])**—William A. Lyon, Foxton House, Foxton, Royston, for **Domsay Rose** 1380, born Jan 26, 1920, farrowed Jan. 11, bred by J. Prentice, Domsay Farm, Great Waltham, Essex; *s.* Humphreys Roger 53, *d.* Domsay Jane 1376.

4162 **II. (£5.)**—Walter H. Haslett, The Oaks, Brassingham, Diss, for **Brassingham Beauty,** 2113, born July 6, 1918, farrowed March 16, bred by F. Bunting, Ugley, Essex; *s.* Broxted Prince 19.

4159 **R. N.**—Charles Cousins, Jenkins, Stisted, Braintree, for **Peace Catbird.**

H. C.—4158. **C.**—4157.

Class 401.—*Essex Sows, born in* 1921.[2]

4182 **I. (£10, & Champion.[1])**—Edward H. Sikes, Fryerning Grange, Ingatestone, for **Fryerning Feature 1st** 3126, born Jan. 20; *s.* Barnston Claudius 1st 7, *d.* Feature of Fryerning 1466 *by* Rutlands Conqueror 125.

4168 **II. (£5)**—A. J. Cousins, Cressing Lodge, Braintree, for **Cressing Duchess 2nd** 3040, born Jan. 9; *s.* Westfield Beau 547, *d.* Cressing Duchess 1368 *by* Laguna Champion 55.

4167 **R. N.**—H. S. Ashton, Trueloves, Ingatestone, for **Trueloves Countess.**

H. C.—4184, **C.**—4178.

Class 402.—*Three Essex Sows, born in* 1922.

4199 **I. (£10.)**—R. Browning Smith, The Brook, Great Tey, Kelvedon, for **Brook Perfectus 10th, Brook Perfectus 11th** and **Brook Ayah 4th,** born Jan. 16; *s.* Brook Masterpiece 215, *ds.* Brook Perfectus 4th 2912 and Brook Ayah 2850.

4197 **II. (£5.)**—Walter C. S. Schwier, Hubbards, Shalford, Saling, Braintree, for **Tewes, Graceful** 5298, **Tewes Hetty** 5306, and **Tewes Hilda** 5308, born Jan. 1 and 7; *s.* Lashby Grand Duke, *ds.* Tewes Rose and Tewes Darling *by* Hubbards Prince.

4191 **R. N.**—A. J. Cousins, Cressing Lodge, Braintree.

H. C.—4198. **C.**—4200.

POULTRY.

By "Cock," "Hen," "Gander," and "Goose," are meant birds hatched previous to January 1, 1922; and by "Cockerel" and "Pullet" are meant birds hatched in 1922.

The Prizes in each Class are as follows: **First Prize, 30*s*. Second Prize, 20*s*. Third Prize, 10*s*.**

Special Prizes were given in the Poultry Classes by the following Clubs:—Dorking, Sussex, White Wyandotte, Columbian Wyandotte, Buff Orpington, White Orpington, British Rhode Island Red, Blue Leghorn, Russian Orloff, Sicilian Buttercup, Barred Plymouth Rock, Buff Plymouth Rock, and Indian Runner Duck.

Class 403.—*Silver Grey Dorking Cocks.*

3 **I. & Special.**—Arthur C. Major, Ditton, Langley, Bucks.
4 **II.**—Alexander Mann, Broomhill Road, Keith, N.B.
2 **III.**—Francis & Warden, Strawberry Poultry Farm, Edgbaston.

Class 404.—*Silver Grey Dorking Hens.*

6 **I. & Special & 10 III.**—Arthur C. Major, Ditton, Langley, Bucks.
7 **II.**—Alexander Mann, Broomhill Road, Keith, N.B.
11 **R. N.**—Francis & Warden, Strawberry Poultry Farm, Edgbaston.
H.C.—8.

Class 405.—*Dark Coloured Dorking Cocks.*

12 **I. & Special.**—George H. Procter, Flass House, Durham.
15 **II.**—Thomas Briden, Cononley, via Keighley.
13 **III. & 16 R. N.**—Arthur C. Major, Ditton, Langley, Bucks.
H.C.—14.

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[1] Champion Cup given by the Essex Pig Society for the best Boar or Sow in Classes 397–401.

[2] Prizes given by the Essex Pig Society.

Class 406.—*Dark Coloured Dorking Hens.*

17 **I.**—Charles Aitkenhead, Carr House Farm, New Seaham.
20 **II.** & 18 **III.**—Arthur C. Major, Ditton, Langley, Bucks.
19 **R. N.**—Thomas Briden, Cononley, via Keighley.

Class 407.—*Dorking Cockerels, any colour.*

21 **I. & Special.**—Charles Aitkenhead, Carr House Farm, New Seaham.
24 **II.**—Thomas Briden, Cononley, via Keighley.
22 **III.**—George H. Procter, Flass House, Durham.
23 **R. N.**—Arthur C. Major, Ditton, Langley, Bucks.

Class 408.—*Dorking Pullets, any colour.*

25 **I.**—Alexander Mann, Broomhill Road, Keith, N.B.
26 **II.**—Thomas Briden, Cononley, via Keighley.
27 **III.** & 29 **R. N.**—Arthur C. Major, Ditton, Langley, Bucks.

Class 409.—*Langshan Cocks or Cockerels.*

33 **I.**—Joseph Howe, Grosvenor Hotel, Church Street, Blackpool.
32 **II.**—John Ayrton, Springfield House, Brighouse.
30 **III.**—John Cox, Danesbury, Solihull.

Class 410.—*Langshan Hens or Pullets.*

34 **I.**—R. S. Twigg, Clipshead, Bradbourn, Ashbourne.
36 **II.**—John Ayrton, Springfield House, Brighouse.
37 **III.**—John Cox, Danesbury, Solihull.

Class 411.—*Croad Langshan Cocks or Cockerels.*

40 **I.**—Edward Cocker, 101, Towngate, Leyland, Lancs.
39 **II.**—Park House Poultry Farm, Barstow, near Horley.
41 **III.**—C. Haddon Jones, Longfield, Tenbury.

Class 412.—*Croad Langshan Hens or Pullets.*

45 **I.**—C. Haddon Jones, Longfield, Tenbury.
42 **II.** W. H. Mitchell, Elmdene, Kenilworth.
44 **III.**—Park House Poultry Farm, Barstow, near Horley.
43 **R. N.**—Edward Crocker, 101, Towngate, Leyland, Lancs.

Class 413.—*Brahma Cocks or Cockerels.*

48 **I.**—M. Ewbank, Cawton, Hovingham, Malton.
49 **II.**—Sheppard & Britton, 60, Sandwell Road, Staple Hill, Bristol.
50 **III.**—T. A. Hargreaves, Bradda, Norfolk Road, Lytham.
46 **R. N.**—H. Martin Wright, The Poplars, Great Shelford, Cambridge.

Class 414.—*Brahma Hens or Pullets.*

51 **I.**—Tom H. Furness, Carlton House, Chesterfield.
52 **II.**—Harry Fox, Richmond Poultry Farm, Matlock.
54 **III.**—H. Martin Wright, The Poplars, Great Shelford, Cambridge.
53 **R. N.**—The Rev. C. M. Stickings, Ronton Vicarage, Haughton, Stafford.

Class 415.—*Cochin Cocks or Cockerels.*

58 **I.**—Tom H. Furness, Carlton House, Chesterfield.
57 **II.** & 55 **III.**—George H. Procter, Flass House, Durham.
56 **R. N.**—Mrs. E. M. Pamplin, Sidney Poultry Farm, Cherry Hinton, Cambridge.

Class 416.—*Cochin Hens or Pullets.*

59 **I.** & 61 **II.**—George H. Procter, Flass House, Durham.
60 **III.**—Mrs. E. M. Pamplin, Sidney Poultry Farm, Cherry Hinton, Cambridge.

Class 417.—*Houdan Cocks, Cockerels, Hens or Pullets.*

73 **I.**—Jim Skinner, Whitehall Poultry Farm, Chittlehampton.
65 **II.**—R. Greenop, Yew Tree, Wilton, Egremont.
64 **III.** & 72 **R. N.**—Mrs. R. Compton Bishop, Montrose House, Harston, Cambs.
H. C.—62, 66, 69, 70, 71. **C.**—63, 68.

Class 418.—*Creve-Cœur Cocks, Cockerels, Hens or Pullets.*

74 **I.**—George Henwood, Lanlivery, Lostwithiel.
79 **II.**, 75 **III.** & 77 **R. N.**—Mrs. R. Compton Bishop, Montrose House, Harston, Cambs.
H. C.—78, 80, 83, 84, 85. **C.**—76, 81, 82.

Class 419.—*Red Sussex Cocks.*

89 **I. & R. N. for Special.**—T. Horton-Jefferson, Wistaston Cottage, Crewe.
90 **II.**—Rupert H. Davies, Netherton, Dudley.
92 **III.**—James Russel, Mapleton, Edenbridge.
93 **R. N.**—Major J. S. Morrison, D.S.O., Basildon Park, Reading.
H. C.—86, 94. **C.**—88, 95.

Class 420.—*Red Sussex Hens.*

96 **I. & 101 III.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
99 **II.**—James Russel, Mapleton, Edenbridge.
100 **R. N.**—T. Horton-Jefferson, Wistaston Cottage, Crewe.
H. C.—97, 98.

Class 421.—*Red Sussex Cockerels.*

109 **I. & Special & 105 III.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
107 **II.**—James Russel, Mapleton, Edenbridge.
H. C.—103. **C**—108.

Class 422.—*Red Sussex Pullets.*

114 **I & 111 II.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
110 **III.**—James Russel, Mapleton, Edenbridge.
116 **R. N.**—C. and E. Stephenson, Ltd., Burton House, Stafford.
H. C.—115 **C.**—112.

Class 423.—*Light Sussex Cocks.*

121 **I. & R.N. for Special.**—James Russel, Mapleton, Edenbridge.
126 **II.**—Mrs. M A Grant, Westlands, Horley.
125 **III.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
117 **R. N.**—C. and E Stephenson, Ltd., Burton House, Stafford.
H. C.—119, 127, 128. **C.**—120.

Class 424.—*Light Sussex Hens.*

140 **I.**—James Russel, Mapleton, Edenbridge.
142 **II.**—T. Horton-Jefferson, Wistaston Cottage, Crewe.
143 **III.**—Mrs. Harry Kent, Stanbridge Grange, Staplefield, Haywards Heath.
135 **R. N.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
H. C.—132, 138. **C.**—131, 133.

Class 425.—*Light Sussex Cockerels.*

161 **I. & Special.**—James Russel, Mapleton, Edenbridge.
149 **II.**—W. J. Golding, Bowens, Penshurst.
154 **III.**—E A. Merckel, Kingswood Poultry Farm, Warlingham.
145 **R. N.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
H. C—151, 158, 159. **C.**—148, 162.

Class 426.—*Light Sussex Pullets.*

169 **I.**—Major J. A Morrison, D.S.O., Basildon Park, Reading.
190 **II.**—E A. Merckel, Kingswood Poultry Farm, Warlingham.
167 **III.**—James Russel, Mapleton, Edenbridge.
182 **R. N.**—C. N. Goode, The Haydens, Bletsoe, Bedford.
H. C.—171, 174, 176, 177, 183. **C.**—166, 173, 178, 179.

Class 427.—*Speckled Sussex Cocks.*

195 **I. & Special & 202 R. N.**—C. and E. Stephenson, Ltd., Burton House, Stafford.
200 **II.**—Major J A. Morrison, D.S.O., Basildon Park, Reading.
194 **III.**—E. T. B. Coppard, The Glen, Mayfield.
H. C.—192, 198, 201. **C.**—197, 204.

Class 428.—*Speckled Sussex Hens.*

213 **I.**—James Russel, Mapleton, Edenbridge.
208 **II.**—C. and E. Stephenson, Ltd., Burton House, Stafford.
207 **III.**—Sir James Knott, Bt., Close House Home Farm, Wylam-on-Tyne.
212 **R. N.**—Capt. T. M. Whittaker, Hendre, Penrhyndeudraeth.
H. C.—211, 214. **C.**—206, 209, 216.

Class 429.—*Speckled Sussex Cockerels.*

224 **I. & R.N. for Special.**—C. and E. Stephenson, Ltd., Burton House, Stafford.
219 **II. & 223 R. N.**—James Russel, Mapleton, Edenbridge.
222 **III.**—E. T. B. Coppard, The Glen, Mayfield.
H. C.—221. **C.**—217, 220.

Class 430.—*Speckled Sussex Pullets.*

228 **I.**—James Russel, Mapleton, Edenbridge.
229 **II. & 233 III.**—Capt. T. M. Whittaker, Hendre, Penrhyndeudraeth.
232 **R. N.**—E. T B. Coppard, The Glen, Mayfield.
H. C.—225, 227, 231. **C.**—226, 230.

Class 431.—*Brown Sussex Cocks.*

234 **I.**—Fleetwood Ashburnham, Guestling, Hastings.
235 **II.**—E. E. Peel, Hatchgate, Blindley Heath.
236 **III.**—Mrs. M. A. Grant, Westlands, Horley.
238 **R. N.**—C. D. Meakins, 4, Clarence Villa, Stony Stratford.
H. C.—237.

Class 432.—*Brown Sussex Hens.*

239 I.—R. L. Adams, Red Barns Farm, Fareham.
240 II.—E. E. Peel, Hatchgate, Blindley Heath.

Class 433.—*Brown Sussex Cockerels.*

242 I. & R. N. for Special.—Fleetwood Ashburnham, Guestling, Hastings.
243 II.—Mrs. M A Grant, Westlands, Horley.
241 III.—Mrs. McIlveen and Miss Neave, Little Barns, Blackboys.

Class 434.—*Brown Sussex Pullets.*

247 I. & Special.—Mrs. M. A. Grant, Westlands, Blackboys.
246 II.—Mrs. McIlveen and Miss Neave, Little Barns, Blackboys.
244 III. & 248 R. N.—Fleetwood Ashburnham, Guestling, Hastings.

Class 435.—*Campine Cocks or Cockerels.*

253 I.—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
254 II.—Eric T. Rees, Llwynhelig Park, Llandilo.
251 III.—D. J. Jones, Tycock Farm, Bettws, Ammanford.
252 R. N.—Mrs. M. E. Cooke, Lower Rochford, Tenbury.
H. C.—250.

Class 436.—*Campine Hens or Pullets.*

263 I. & 259 R. N.—Lt.-Col. W. G. Lucas, Beech Place, Stowmarket.
262 II.—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
257 III.—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
H. C.—258, 265. C.—261.

Class 437.—*White Wyandotte Cocks.*

271 I.—Lord Dewar, Homestall, East Grinstead.
272 II.—Joseph Atkinson & Son, Tower Farm, Woodhall Spa.
267 III.—Tom H. Furness, Carlton House, Chesterfield.
277 R. N.—S. T. Stevenson, Swepston, Leicester.
H. C.—273. C.—274.

Class 438.—*White Wyandotte Hens.*

287 I.—Lord Dewar, Homestall, East Grinstead.
281 II.—George Hardy, Pickering Lodge, Timperley.
283 III.—Joseph Atkinson & Son, Tower Farm, Woodhall Spa.
286 R. N.—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
H. C.—292, 293. C.—291, 296.

Class 439.—*White Wyandotte Cockerels.*

302 I. & Special & 308 II., & R.N. for Special.—Lord Dewar, Homestall, East Grinstead.
314 III.—Tom A. Scott & Co., The Trenches, Slough.
305 R. N.—George Hardy, Pickering Lodge, Timperley.
H. C.—298, 312. C.—309, 315, 316.

Class 440.—*White Wyandotte Pullets.*

320 I. & Special & 329 II., & R.N. for Special.—Lord Dewar, Homestall, East Grinstead.
319 III.—George Hardy, Pickering Lodge, Timperley.
323 R. N.—Viscount Pirrie, Witley Park, Brook, Godalming.
H. C.—322, 327. C.—326, 330.

Class 441.— *Black Wyandotte Cocks or Cockerels.*

341 I.—Thomas F. Essex, Milton, Cambridge.
338 II.—Tom H. Furness, Carlton House, Chesterfield.
335 III.—Major K. Willett, The Romans, Southwick.
339 R. N.—J. A. G. Emmet, Moreton Paddox, Moreton Morrell.
H. C.—334. C.—340.

Class 442.—*Black Wyandotte Hens or Pullets.*

346 I.—B. C. Kidger, Ilam Meadows, Ilam, near Ashbourne.
345 II.—Francis & Warden, Strawberry Poultry Farm, Edgbaston.
343 III.—Major K. Willett, The Romans, Southwick.
344 R. N.—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
H. C.—342.

Class 443.—*Gold or Silver Laced Wyandotte Cocks or Cockerels.*

350 I.—Thomas Lockwood, The Woodlands, Pateley Bridge.
347 II.—Tom H. Furness, Carlton House, Chesterfield.
348 III.—J. G. Morten, Pentrich, Derby.
349 R. N.—Thomas Abbot, Forncett, Norfolk.
H. C.—353. C.—351, 352.

Class 444.—*Gold or Silver Laced Wyandotte Hens or Pullets.*

358 **I.**—Herbert Spensley, Oak Farm, Menston, via Leeds.
359 **II.**—R. Gray, Wyandotte Farm, Crawcrook, Ryton-on-Tyne.
355 **III.**—Thomas Lockwood, The Woodlands, Pateley Bridge.
357 **R. N.**—Tom H. Furness, Carlton House, Chesterfield.
H. C.—356.

Class 445.—*Blue Wyandotte Cocks or Cockerels.*

360 **I.** & 364 **II.**—Mrs. W. Holdsworth, Bernard House, Newbridge Crescent, Wolverhampton.
363 **II.** & 361 **R. N.**—W. H. Fairhurst, Ingle Knott, Moss Lane, Cadishead, Manchester.

Class 446.—*Blue Wyandotte Hens or Pullets.*

367 **I.**—Isaac Spencer, 50, Park Road, Elland, Yorks.
366 **II.**—Mrs. W. Holdsworth, Bernard House, Newbridge Crescent, Wolverhampton.
365 **III.** & 369 **R. N.**—W. H. Fairhurst, Ingle Knott, Moss Lane, Cadishead, Manchester.
H. C.—370.

Class 447.—*Columbian Wyandotte Cocks.*

372 **I. & R. N. for Special.**—George Hardy, Pickering Lodge, Timperley.
371 **II.**—L. H. Wace, Kingsland Poultry Farm, Beaminster.
374 **III.**—John Dickinson, 47, Herbert Street, Cambridge.
373 **R. N.**—Thomas T. Batt, West Hill, Heytesbury.
H. C.—375. **C.**—377.

Class 448.—*Columbian Wyandotte Hens.*

380 **I. & R. N. for Special.**—George Hardy, Pickering Lodge, Timperley.
379 **II.** & 381 **R. N.**—Thomas T. Batt, West Hill, Heytesbury.
378 **III.**—L. H. Wace, Kingsland Poultry Farm, Beaminster.

Class 449.—*Columbian Wyandotte Cockerels.*

383 **I. & Special** & 386 **II.**—W. M. Bell, St. Leonards Poultry Farm, Ringwood.
384 **II.**—George Hardy, Pickering Lodge, Timperley.
387 **R. N.**—William C. Yeoman, Marsden Hall, Nelson.

Class 450.—*Columbian Wyandotte Pullets.*

390 **I. & Special.**—George Hardy, Pickering Lodge, Timperley.
389 **II.**—W. M. Bell, St. Leonards Poultry Farm, Ringwood.
392 **III.**—William C. Yeoman, Marsden Hall, Nelson.
388 **R. N.**—Harry C. Ardron, Ye Olde Manor House, Long Melford.

Class 451.—*Wyandotte Cocks or Cockerels, any other variety.*

397 **I.**—William Lear, Howard Cottage, Wetheral, Carlisle.
399 **II.** & 396 **R. N.**—J. G. Morten, Pentrich, Derby.
395 **III.**—Wright & Cattell, 12, Oxford Street, Kettering.
H. C.—393. **C.**—394.

Class 452.—*Wyandotte Hens or Pullets, any other variety.*

402 **I.**—J. A. Boardley, Slyne Road, Lancaster.
403 **II.**—William Lear, Howard Cottage, Wetheral, Carlisle.

Class 453.—*Buff Orpington Cocks.*

405 **I.**—W. J. Golding, Bowens, Penshurst.
407 **II.**—John Brooks, Myrtle Poultry Farm, Irlam, Manchester.
409 **III.**—F. M. Rogers, Wanbarrow Poultry Farm, Hurstpierpoint.
406 **R. N.**—Harold Corrie, Heath House Farm, Lowfield Heath.

Class 454.—*Buff Orpington Hens.*

415 **I. & Special.**—F. M. Rogers, Wanbarrow Poultry Farm, Hurstpierpoint.
414 **II.**—John Brooks, Myrtle Poultry Farm, Irlam, Manchester.
410 **III.**—W. J. Golding, Bowens, Penshurst.

Class 455.—*Buff Orpington Cockerels.*

417 **I. & R. N. for Special.**—John Warren, Burton Manor, Marnhull.
418 **II.**—W. J. Golding, Bowens, Penshurst.
419 **III.**—F. M. Rogers, Wanbarrow Poultry Farm, Hurstpierpoint.
416 **R. N.**—Park House Poultry Farm, Ltd., Barstow, near Horley.

Class 456.—*Buff Orpington Pullets.*

425 **I.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
427 **II.**—F. M. Rogers, Wanbarrow Poultry Farm, Hurstpierpoint.
423 **III.** & 429 **R. N.**—W. J. Golding, Bowens, Penshurst.
H. C.—426.

Class 457.—*White Orpington Cocks.*

432 **I. & R. N. for Special.**—**Mrs. A. Holmes, Haigh Cottage, Moorside Road, Eccleshill, Bradford.**
431 **II.**—George H. Procter, Flass House, Durham.
434 **III.**—Rupert H. Davies, Netherton, Dudley.

Class 458.—*White Orpington Hens.*

436 **I. & Special.**—Lord Dewar, Homestall, East Grinstead.
438 **II.**—George H. Procter, Flass House, Durham.
437 **III.**—John Warren, Burton Manor, Marnhull.

Class 459.—*White Orpington Cockerels.*

444 **I. & Special & 440 II.**—John Warren, Burton Manor, Marnhull.
442 **III.**—Lt.-Col. H. Watts, Haslington Hall, Crewe.
443 **R. N.**—Samuel Bradley, Snape Brook, Siddington, Chelford.

Class 460.—*White Orpington Pullets.*

446 **I. & R. N. for Special & 449 III.**—John Warren, Burton Manor, Marnhull.
448 **II.**—George H. Procter, Flass House, Durham.
451 **R. N.**—Lt.-Col. H. Watts, Haslington Hall, Crewe.
H. C.—445.

Class 461.—*Black Orpington Cocks.*

458 **I.**—Miss N. Shanks, Stetchworth, Newmarket.
457 **II.**—George H. Procter, Flass House, Durham.
452 **III.**—Lord Dewar, Homestall, East Grinstead.
462 **R. N.**—H. W. T. Cross, 291, Norwich Road, Ipswich.
H. C.—456. **C.**—461.

Class 462.—*Black Orpington Hens.*

468 **I.**—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
466 **II.**—Lord Dewar, Homestall, East Grinstead.
464 **III.**—Fred Swindells, Crossley, Buglawton, Congleton.
469 **R. N.**—H. W. T. Cross, 291, Norwich Road, Ipswich.
H. C.—465.

Class 463.—*Black Orpington Cockerels.*

472 **I.**—W. M. Bell, St. Leonards Poultry Farm, Ringwood.
471 **II.**—John Burdett, Lake Bank Terrace, Wingate.
470 **III.**—John Warren, Burton Manor, Marnhull.

Class 464.—*Black Orpington Pullets.*

473 **I.**—John Burdett, Lake Bank Terrace, Wingate.
474 **II.**—W. M. Bell, St. Leonards Poultry Farm, Ringwood.
475 **III.**—John Warren, Burton Manor, Marnhull.

Class 465.—*Blue Orpington Cocks or Cockerels.*

479 **I. & 481 III.**—Harold Corrie, Heath House Farm, Lowfield Heath.
477 **II.**—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
480 **R. N.**—H. W. T. Cross, 291, Norwich Road, Ipswich.
H. C.—478.

Class 466.—*Blue Orpington Hens or Pullets.*

483 **I.**—Harold Corrie, Heath House Farm, Lowfield Heath.
484 **II., 487 III. & 482 R. N.**—Mrs. A. E. Phillips, Old Dalby Hall, Melton Mowbray.

Class 467.—*British Rhode Island Red Single Comb Cocks.*

505 **I. & Special.**—T. C. Crawhall, Haveray Park, Kirk Hammerton, York.
496 **II.**—Mrs. Allan J. Moore, Eightoaks, Knutsford.
493 **III.**—Ivor H. Radcliffe, Brynderin, Peterston-super-Ely, Cardiff.
499 **R. N.**—Hugh J. Lewis, Field House, Shardlow, Derby.
H. C.—490, 491, 500, 502. **C.**—494, 498, 501.

Class 468.—*British Rhode Island Red Single Comb Hens.*

509 **I. & R. N. for Special**—Miss Frances Champion, Heather Hall, Leicester.
516 **II.**—Mrs. Allan J. Moore, Eightoaks, Knutsford.
513 **III.**—T. Jones, Brewery House, Chipping Norton.
508 **R. N.**—Miss M. H. Clay, Wembury House, Plymstock.
H. C.—510, 511, 512, 514. **C.**—522, 523.

Class 469.—*British Rhode Island Red Single Comb Cockerels.*

536 **I. & R. N. for Special.**—Mrs. Allan J. Moore, Eightoaks, Knutsford.
542 **II.**—C. H. Horn, Buckland House, Wellington, Somerset.
544 **III.**—W. R. Abbey, Croft Farm, Hessay, York.
530 **R. N.**—Thomas Hodgson & Son, Redsholm Farm, Cotherstone.
H. C.—525, 537, 543, 546, 550. **C.**—531, 538, 551.

Class 470.—*British Rhode Island Red Single Comb Pullets.*

563 **I. & Special.**—Hugh J. Lewis, Field House, Shardlow, Derby.
556 **II.**—T. C. Crawhall, Haveray Park, Kirk Hammerton, York.
582 **III.**—John Spencer, Market Place, Ashbourne.
572 **R. N.**—T. Jones, Brewery House, Chipping Norton.
H. C.—559, 562, 566, 579, 588. **C.**—554, 564, 576, 587, 592.

Class 471.—*British Rhode Island Red Rose Comb Cocks.*

598 **I. & Special.**—Miss M. H. Clay, Wembury House, Plymstock.
597 **II.**—Mrs. C. Colbeck, Boyle Hall, West Ardsley, Yorks.
595 **III.**—Tom A. Scott and Co., The Trenches, Slough.
594 **R. N.**—R. E. Marsh, Red Farm, Swanwick, Alfreton.
H. C.—593, 600. **C.**—596.

Class 472.—*British Rhode Island Red Rose Comb Hens.*

608 **I. & R. N. for Special & 602 III.**—Tom A. Scott and Co., The Trenches, Slough.
605 **II.**—R. E. Marsh, Red Farm, Swanwick, Alfreton.
604 **R. N.**—C. W. Allsop, Upper Hartshay, Heage, Belper.
H. C.—607.

Class 473.—*British Rhode Island Red Rose Comb Cockerels.*

612 **I.**—Tom A. Scott and Co., The Trenches, Slough.
614 **II.**—Perry A. Ball, Lower Poultry Farm, Doveridge, Derby.
611 **III.**—R. E. Marsh, Red Farm, Swanwick, Alfreton.
610 **R. N.**—J. R. Tucker, Colby Park, Braunton.
H. C.—616.

Class 474.—*British Rhode Island Red Rose Comb Pullets.*

618 **I.**—R. E. Marsh, Red Farm, Swanwick, Alfreton.
623 **II.**—Mrs. C. Colbeck, Boyle Hall, West Ardsley, Yorks.
622 **III.**—Hugh J. Lewis, Field House, Shardlow, Derby.
620 **R. N.**—J. R. Tucker, Colby Park, Braunton.

Class 475.—*Frizzles Cocks or Cockerels.*

631 **I.**—Major G. T. Williams, Tredrea, Perranwell Station.
628 **II. & 630 R. N.**—Sir Claud Alexander, Bt., Faygate Wood, Faygate.
626 **III.**—The Countess of Jersey, Middleton Park, Bicester.
H. C.—632. **C.**—629.

Class 476.—*Frizzles Hens or Pullets.*

636 **I. & 637 III.**—Sir Claud Alexander, Bt., Faygate Wood, Faygate.
635 **II.**—Major G. T. Williams, Tredrea, Perranwell Station.
633 **R. N.**—The Countess of Jersey, Middleton Park, Bicester.

Class 477.—*Old English Game Black-Red Cocks or Cockerels.*

638 **I.**—Lord Dewar, Homestall, East Grinstead.
645 **II. & 640 R. N.**—C. and W. Heath, Kale Road, Newcastle, Staffs.
644 **III.**—Tom Woodcock, Burton Fen, Lincoln.
H. C.—639, 641, 642. **C.**—646.

Class 478.—*Old English Game Clay or Wheaten Hens or Pullets.*

648 **I.**—A. H. Brownson, The Gorse Farm, Nuneaton.
650 **II.**—C. and W. Heath, Kale Road, Newcastle, Staffs.
652 **III.**—Tom Woodcock, Burton Fen, Lincoln.
651 **R. N.**—T. H. Egglestone, St. John's Chapel, Weardale.
H. C.—647, 649.

Class 479.—*Old English Game Cocks or Cockerels, any other colour.*

660 **I.**—C. and W. Heath, Kale Road, Newcastle, Staffs.
658 **II.**—A. H. Brownson, The Gorse Farm, Nuneaton.
654 **III.**—John Watson, Eden Mount, Kendal.
657 **R. N.**—F. A. Harmer, Benacre, Wrentham.
H. C.—653, 659, 661, 663.

Class 480.—*Old English Game Hens or Pullets, any other colour.*

670 **I.**—C. and W. Heath, Kale Road, Newcastle, Staffs.
668 **II.**—A. H. Brownson, The Gorse Farm, Nuneaton.
666 **III.**—John Watson, Eden Mount, Kendal.
667 **R. N.**—H. Watkinson, Brook Park, Northop.
H. C.—664, 665. **C.**—669.

Class 481.—*Indian Game Cocks or Cockerels.*

673 I.—J. H. Baker and Sons, Windyash, Barnstaple.
675 II.—Francis and Warden, Strawberry Poultry Farm, Edgbaston.
671 III.—West Wight Poultry Farm, Freshwater, Isle of Wight.
672 R. N.—Langman Bevan, Langham Lodge, Epping.
H. C.—676.

Class 482.—*Indian Game Hens or Pullets.*

677 I.—J. H. Baker and Sons, Windyash, Barnstaple.
679 II.—Langman Bevan, Langham Lodge, Epping.
678 III.—E. C. Tucker, Bowden Hall Farm, Upton St. Leonards, Gloucester.
681 R. N.—West Wight Poultry Farm, Freshwater, Isle of Wight.
H. C.—680.

Class 483.—*Minorca Cocks or Cockerels.*

683 I. & 682 II.—Lord Dewar, Homestall, East Grinstead.

Class 484.—*Minorca Hens or Pullets.*

684 I. & 685 II.—Lord Dewar, Homestall, East Grinstead.

Class 485.—*White Leghorn Cocks or Cockerels.*

692 I.—A. H. Stanbury, Hele House, Newton Abbot.
691 II. & 687 III.—Lord Dewar, Homestall, East Grinstead.
686 R. N.—H. H. Taylor, 11, Hills Lane, Ely.
H. C.—689.

Class 486.—*White Leghorn Hens or Pullets.*

698 I. & 694 II.—Lord Dewar, Homestall, East Grinstead.
700 III.—A. H. Stanbury, Hele House, Newton Abbot.
697 R. N.—Mrs. Harry Kent, Stanbridge Grange, Staplefield.

Class 487.—*Brown Leghorn Cocks or Cockerels.*

705 I. & 708 II.—Ernest Ll. Simon, Pembroke.
704 III.—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
707 R. N.—John Ashworth, Ley Farm, Heywood.

Class 488.—*Brown Leghorn Hens or Pullets.*

710 I.—Francis and Warden, Strawberry Poultry Farm, Edgbaston.
711 II.—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
709 III.—Nicholas Rossall, South Marle Pitts Farm, Whalton, near Chorley.

Class 489.—*Black Leghorn Cocks or Cockerels.*

714 I. & 716 III.—Mrs. Harry Kent, Stanbridge Grange, Staplefield.
713 II.—W. G. Rogers, Lynwood House, Globe Road, Romford.

Class 490.—*Black Leghorn Hens or Pullets.*

719 I.—Dr. R. Nelson, Norfolk Street, Glossop.
720 II.—Mrs. Harry Kent, Stanbridge Grange, Staplefield.
721 III.—W. G. Rogers, Lynwood House, Globe Road, Romford.
726 R. N.—A. H. Catchpole, Gate House, Framlingham.
H. C.—722.

Class 492.—*Blue Leghorn Hens or Pullets.*

727 I. & Special.—J. W. and H. Waterhouse, 31, Hope Street, Glossop.

Class 493.—*Leghorn Cocks or Cockerels, any other colour.*

732 I.—R. Higgs, Gorslwyd, Bettws, Ammanford.
729 II.—H. Brazier, Ley House, Granborough, Winslow.
730 III.—John J. Davies, 3, Maerdy Road, Bettws, Ammanford.
731 R. N.—Frank E. Derham, The Old Hall, Hilton, Derby.
H. C.—734.

Class 494.—*Leghorn Hens or Pullets, any other colour.*

740 I. & 735 III.—H. Brazier, Ley House, Granborough, Winslow.
737 II.—R. Higgs, Gorslwyd, Bettws, Ammanford.

Class 495.—*Russian Orloff Cocks or Cockerels.*

743 I. & Special. —Mrs. C. Colbeck, Boyle Hall, West Ardsley, Yorks.
742 II.—Park House Poultry Farm, Ltd., Barstow, near Horley.
745 III.—John Sutherland, 80, Rosebery Terrace, Wick, Caithness.
746 R. N.—Mrs. Arthur Sherston, Otley Hall, Ipswich.

Class 496.—*Russian Orloff Hens or Pullets.*

749 I. & R. N. for Special.—Mrs. C. Colbeck, Boyle Hall, West Ardsley, Yorks.
754 II.—John Sutherland, 80, Rosebery Terrace, Wick, Caithness.
750 III.—Mrs. Arthur Sherston, Otley Hall, Ipswich.
748 R. N.—J. R. Tucker, Colby Park, Braunton.
H. C.—752.

Class 497.—*Gold or Silver Sicilian Buttercup Cocks or Cockerels.*

759 I. & Special.—Mrs. C. Colbeck, Boyle Hall, West Ardsley, Yorks.
756 II. & 762 R. N.—Mrs. Arthur Sherston, Otley Hall, Ipswich.
761 III.—Perry A. Ball, Lower Poultry Farm, Doveridge, Derby.
H. C.—758. C.—757.

Class 498.—*Gold or Silver Sicilian Buttercup Hens or Pullets.*

767 I. & R. N. for Special.—Capt. K. H. Coulson, The Lodge, Horningsea, Cambridge.
769 II. & 764 R. N.—Frank E. Derham, The Old Hall, Hilton, Derby.
770 III.—Mrs. C. Colbeck Boyle Hall, West Ardsley, Yorks.
H. C.—772. C.—763.

Class 499.—*Brown Sicilian Buttercup Cocks or Cockerels.*

779 I. & Special & 773 R. N.—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
780 II.—Tom A. Scott and Co., The Trenches, Slough.
778 III.—D. F. Wylie, Rosebrooke, Minsterley, Shrewsbury.
H. C—775. C.—774.

Class 500.—*Brown Sicilian Buttercup Hens or Pullets.*

790 I. & R.N. for Special & 785 II.—Tom A. Scott and Co., The Trenches, Slough.
788 III.—Major J. A. Morrison, D.S.O., Basildon Park, Reading.
791 R. N.—Miss M. E. Shuter, Hayes Court, Middlesex.
H. C.—783. C.—787.

Class 501.—*Barred Plymouth Rock Cocks.*

792 I. & R. N. for Special & 795 II.—Dr. E. S. Jackson, Carnforth.
793 III.—John Taylor, Heath Farm, Tiptree.
797 R. N.—Frank Neave, Lingwood, Norwich.
H. C.—798. C.—796.

Class 502.—*Barred Plymouth Rock Hens.*

799 I. & Special & 803 III.—W. R. Williams, Carnforth.
804 II. & 800 R. N.—Dr. E. S. Jackson, Carnforth.
H. C.—801. C.—802.

Class 503.—*Barred Plymouth Rock Cockerels.*

806 I.—Andrew Southerin, 88, Burnley Road, Padiham.
808 II.—W. R. Williams, Carnforth.
811 III.—John Williams, Shap.
814 R. N.—Dr. E. S. Jackson, Carnforth.
H. C.—810, 815. C.—812.

Class 504.—*Barred Plymouth Rock Pullets.*

818 I.—Dr. E. S. Jackson, Carnforth.
826 II. & 817 R. N.—John Pennington, Heswall-on-Dee, Birkenhead.
820 III.—John Taylor, Heath Farm, Tiptree.
H. C.—816, 824. C.—819, 823.

Class 505.—*Buff Plymouth Rock Cocks or Cockerels.*

835 I. & R. N. for Special.—Dr. E. S. Jackson, Carnforth.
833 II.—W. R. Abbey, Croft Farm, Hessay, York.
831 III.—Bilsborough and Bland, Conder Green, Lancaster.
830 R. N.—Evan Stephens, 31, Tymaen Street, Port Talbot.
H. C.—834. C.—837.

Class 506.—*Buff Plymouth Rock Hens or Pullets.*

841 I. & Special.—Dr. E. S. Jackson, Carnforth.
843 II.—John Taylor, Heath Farm, Tiptree.
840 III.—W. R. Abbey, Croft Farm, Hessay, York.
842 R. N.—Bilsborough and Bland, Conder Green, Lancaster.
H. C.—838.

Class 507.—*Plymouth Rock Cocks or Cockerels, any other colour.*

844 I.—Dr. E. S. Jackson, Carnforth.

Class 508.—*Plymouth Rock Hens or Pullets, any other colour.*

845 II.—Dr. E. S. Jackson, Carnforth.

Class 509.—*Ancona Cocks or Cockerels.*

846 **I.**—HENRY HARTLEY, Seghole Farm, Trawden, Colne.
847 **II.**—MRS. HOYLE, Great Brickhill Rectory, Bletchley.

Class 510.—*Ancona Hens or Pullets.*

856 **I.**—MRS. E. F. HURT, South Darley, Matlock.
853 **II.**—MRS. HOYLE, Great Brickhill Rectory, Bletchley.
851 **III.**—WHITEHEAD AND JONES, Ty Newydd Cottage, Llandegai.
849 **R. N.**—JAMES BODELL, Park End, Repton, Derby.
H. C.—852. **C.**—855, 857.

Class 511.—*Cocks or Cockerels, any other distinct variety, except Bantams.*

859 **I.**—MRS. THORNHILL, 263, Sheffield Road, Glossop. Modern Game.
867 **II.**—WILLIAM RAMSAY, Muirhouse Cottage, Crosshouse, Kilmarnock. Scotch Grey.
864 **III.**—HARRY FOX, Richmond Poultry Farm, Matlock. Redcap.
863 **R. N.**—R. de C. PEELE, Linney, Ludlow. Malay.
H. C.—858, 861, 862, 865. **C.**—866.

Class 512.—*Hens or Pullets, any other distinct variety, except Bantams.*

880 **I.**—MRS. JACK EDWARDS, Railway Hotel, Llandilo. Jubilee Indian Game.
868 **II.**—TOM H. FURNESS, Carlton House, Chesterfield.
872 **III.**—MRS. THORNHILL, 263, Sheffield Road, Glossop. Modern Game.
873 **R. N.**—HARRY FOX, Richmond Poultry Farm, Matlock. Redcap.
H. C.—869, 870, 871, 875, 876, 877, 878, 879. **C.**—881.

Class 513.—*Utility Poultry. White Wyandotte Cocks or Cockerels.*

887 **I.**—PARK HOUSE POULTRY FARM, LTD., Barstow, near Horley.
885 **II.**—JAMES HUNTLY AND SON, Hirsel Poultry Farm, Coldstream.
888 **III.**—RICHARD RODWELL, Walverden Poultry Farm, Nelson.
886 **R. N.**—LT.-COL. G. M. TYRRELL, D.S.O., Bletsoe, Bedford.
H. C.—891. **C.**—883.

Class 514.—*Utility Poultry. White Wyandotte Hens or Pullets.*

903 **I.** & 896 **II.**—LT.-COL. G. M. TYRRELL, D.S.O., Bletsoe, Bedford.
894 **III.**—RICHARD RODWELL, Walverden Poultry Farm, Nelson.
911 **R. N.**—CLOPHILL POULTRY FARM, LTD., Clophill, Ampthill.
H. C.—898, 902. **C.**—906.

Class 515.—*Utility Poultry. White Leghorn Cocks or Cockerels.*

914 **I.**—RICHARD RODWELL, Walverden Poultry Farm, Nelson.
913 **II.**—MAJOR J. N. CHAWORTH-MUSTERS, Wiverton Hall, Bingham.
917 **III.**—JAMES HUNTLY AND SON, Hirsel Poultry Farm, Coldstream.
916 **R. N.**—FIELD-MARSHAL SIR A. A. BARRETT, Ouse Manor Farms, Sharnbrook.

Class 516.—*Utility Poultry. White Leghorn Hens or Pullets.*

931 **I.**—RICHARD RODWELL, Walverden Poultry Farm, Nelson.
922 **II.**—MISS M. E. SHUTER, Hayes Court, Middlesex.
932 **III.** & 924 **R. N.**—MRS. BRAMWELL DAVIS, Lolworth Poultry Farm, Cambridge.
H. C.—925, 935. **C.**—921, 929.

Class 517.—*Utility Poultry. Rhode Island Red Cocks or Cockerels.*

938 **I.**—FIELD-MARSHALL SIR A. A. BARRETT, Ouse Manor Farms, Sharnbrook.
936 **II.**—W. R. ABBEY, Croft Farm, Hessay, York.
937 **III.**—REGINALD BARWELL, Swavesey Poultry Farm, Cambridge.
939 **R. N.**—WEST WIGHT POULTRY FARM, Freshwater, Isle of Wight.

Class 518.—*Utility Poultry. Rhode Island Red Hens or Pullets.*

945 **I.**—FIELD-MARSHALL SIR A. A. BARRETT, Ouse Manor Farms, Sharnbrook.
944 **II.**—MR. AND MRS. HAROLD MARSHALL, Bramshott Manor, Liphook.
949 **III.**—MAJOR T. POTTER, St. Stephen's Poultry Farm, St. Albans.
940 **R. N.**—W. R. ABBEY, Croft Farm, Hessay, York.
H. C.—941, 942.

Class 519.—*Utility Poultry. Sussex Cocks or Cockerels, any colour.*

951 **I.**—WEST WIGHT POULTRY FARM, Freshwater, Isle of Wight.
950 **II.**—LADY ANDERSON, Harrold Priory, Sharnbrook.

Class 520.—*Utility Poultry. Sussex Hens or Pullets, any colour.*

955 **I.**—MR. AND MRS. HAROLD MARSHALL, Bramshott Manor, Liphook.
957 **II.** & 953 **R. N.**—LADY ANDERSON, Harrold Priory, Sharnbrook.
956 **III.**—WEST WIGHT POULTRY FARM, Freshwater, Isle of Wight.
H. C.—954.

Class 521.—*Utility Poultry. Hens or Pullets, any variety, not sitting.*

959 I.—Lord Dewar, Homestall, East Grinstead. Black Orpington.
964 II.—C. Haddon Jones, Longfield, Tenbury. Ancona.
960 III.—Arthur Kemp, 88, May Street, Derby. Black Leghorn.
958 R. N.—James Huntly and Son, Hirsel Poultry Farm, Coldstream. Black Leghorn.
H. C.—962. C.—961.

Class 522.—*Aylesbury Drakes or Ducks, bred prior to* 1922.

968 I. & 970 II.—James Huntly and Son, Hirsel Poultry Farm, Coldstream.
966 III.—Park House Poultry Farm, Ltd., Barstow, near Horley.
971 R. N.—Miss Emmy Masson, Attimore Hall, Hatfield.
H. C.—965.

Class 523.—*Aylesbury Drakes or Ducks, bred in* 1922.

975 I. & 972 II.—James Huntly and Son, Hirsel Poultry Farm, Coldstream.
976 III.—Mrs. M. E. Cooke, Lower Rochford, Tenbury.

Class 524.—*Rouen Drakes or Ducks, bred prior to* 1922.

981 I.—Tom H. Furness, Carlton House, Chesterfield.
980 II —James Huntly and Son, Hirsel Poultry Farm, Coldstream.
978 III.—Mrs. M. E. Cooke, Lower Rochford, Tenbury.
979 R. N.—Abbot Bros., Thuxton, Norfolk.

Class 525.—*Rouen Drakes or Ducks, bred in* 1922.

982B I. & 982A III.—F. W. Myhill, Hethel, Norwich.
982 II.—Mrs. M. E. Cooke, Lower Rochford, Tenbury.

Class 526.—*White Indian Runner Drakes or Ducks, bred prior to* 1922.

992 I. & Special, 995 II. & 998 R. N.—The Rev. John Wilson, The Rectory, Hutton-in-the-Forest, Penrith.
993 III.—William Walton, Bellgarth, Newtown, Carlisle.
H. C.—985, 986, 989, 997.

Class 527.—*White Indian Runner Drakes, bred in* 1922.

1003 I. & Special, 1001 III. & 1005 R. N.—The Rev. John Wilson, The Rectory, Hutton-in-the-Forest, Penrith.
1002 II.—Mrs. M. E. Cooke, Lower Rochford, Tenbury.

Class 528.—*White Indian Runner Ducks, bred in* 1922.

1008 I.—Mrs. M. E. Cooke, Lower Rochford, Tenbury.
1010 II. and 1007 III.—The Rev. John Wilson, The Rectory, Hutton-in-the-Forest, Penrith.

Class 529.—*Fawn Indian Runner Drakes or Ducks, bred prior to* 1922.

1027 I.—Old and Peters, Berkeley House, Pimperne, Blandford.
1019 II. & Special, 1015 III. & 1023 R. N.—The Rev. John Wilson, The Rectory, Hutton-in-the-Forest, Penrith.
H. C.—1014, 1025.

Class 530.—*Fawn Indian Runner Drakes or Ducks, bred in* 1922.

1028 I.—Miss Annie Percifull, Beach Poultry Farm, Minehead.
1029 II. & 1035 III.—W. Woodmass, Howard House, Gilsland.
1031 R. N.—Mrs. M. E. Cooke, Lower Rochford, Tenbury.

Class 531.—*Indian Runner Drakes or Ducks, any other colour, bred prior to* 1922.

1039 I. & Special.—James Huntly and Son, Hirsel Poultry Farm, Coldstream.
1043 II. & 1044 III.—The Rev. John Wilson, The Rectory, Hutton-in-the-Forest, Penrith.
1041 R. N.—A. Mansell, The Shepherd's Close, Kingston Stert, Thame.
H. C.—1046.

Class 532.—*Indian Runner Drakes or Ducks, any other colour, bred in* 1922.

1051 I., 1049 II., 1050 III. & 1047 R. N.—The Rev. John Wilson, The Rectory, Hutton-in-the-Forest, Penrith.

Class 533.—*Drakes or Ducks, any other variety, bred prior to* 1922.

1057 I. & 1061 II.—James Huntly and Son, Hirsel Poultry Farm, Coldstream. Buff Orpingtons.
1052 III.—Miss Esmé Gilroy, Dallicot, Bridgnorth. Buff Orpington.
1055 R. N.—Harold W. Andreae, Brickfields Poultry Farm, Harton, Cambridge Brickfield.
H. C.—1053, 1056, 1060.

Class 534.—*Drakes or Ducks, any other variety, bred in* 1922.

1064 I. & 1067 III.—James Huntly and Son, Hirsel Poultry Farm, Coldstream. Buff Orpingtons.
1065 II.—W. H. Mitchell, Elmdene, Kenilworth. Buff Orpington.
1066 R. N.—Miss Esmé Gilroy, Dallicot, Bridgnorth. Buff Orpington.
H. C.—1063.

Class 535.—*Embden Ganders or Geese.*

1068 I.—Abbot Bros., Thuxton, Norfolk.
1069 II.—J. D. Beak, Maiden Bradley, Bath.
1070 III.—Frank Neave, Lingwood, Norwich.

Class 536.—*Toulouse Ganders or Geese.*

1071 I.—Abbot Bros., Thuxton, Norfolk.
1072 II.—Harold Corrie, Heath House Farm, Lowfield Heath.
1073 III.—Mrs. Harry Kent, Stanbridge Grange, Staplefield.

Class 539.—*Turkey Cocks, any other variety than White.*[1]

1078 I.—H. J. Cattell, Church Farm, Bickenhill, Hampton-in-Arden.
1079 II.—Abbot Bros., Thuxton, Norfolk.
1086 III.—Thomas Abbot, Forncett, Norwich.
1083 R. N.—Hedley Morgan, Great Gobions, Hertford.
H. C.—1082.

Class 540.—*Turkey Hens, any other variety than White.*[1]

1088 I.—H. J. Cattell, Church Farm, Bickenhill, Hampton-in-Arden.
1090 II.—Abbot Bros., Thuxton, Norfolk.
1091 III.—Alexander Shewan, South Percy Horner, Fraserburgh.
H. C.—1089, 1093, 1093A.

Class 541.—*Sebright Bantam Cocks or Cockerels.*

1094 I.—C. I. Young, 8, Palmer Street, Frome.
1096 II.—J. C. Preston, Bay House, Ellel, Lancaster.
1095 III.—Tom Kemp, Jun., Cogshall Hall, Northwich.

Class 542.—*Sebright Bantam Hens or Pullets.*

1104 I.—J. C. Preston, Bay House, Ellel, Lancaster.
1102 II.—C. I. Young, 8, Palmer Street, Frome.
1099 III.—Miss Betty Bennett, Ridgeway Farm, Frome.
1101 R. N.—Tom Kemp, Jun. Cogshall Hall, Northwich.
H. C.—1103.

Class 543.—*Wyandotte Bantam Cocks or Cockerels.*

1109 I.—Lord Dewar, Homestall, East Grinstead.
1105 II.—Frank Smith, West End Villa, Pinxton, Nottingham.
1110 III.—Isaac Murfin, Nuttalls Park, Ripley, Derby.
1108 R. N.—A. Raven, Bramcote, Attleborough, Nuneaton.
H. C.—1113. C.—1107.

Class 544.—*Wyandotte Bantam Hens or Pullets.*

1115 I.—Isaac Murfin, Nuttalls Park, Ripley, Derby.
1118 II.—Lord Dewar, Homestall, East Grinstead.
1116 III.—Cater and Booth, Leabrooks, Alfreton.
1122 R. N.—George Jones, Glan-y-mor, Windsor Esplanade Docks, Cardiff.
H. C.—1121. C.—1123.

Class 545.—*Scotch Grey Bantam Cocks or Cockerels.*

1125 I. & 1124 II.—James McCrae, 13, Thomson Street, Kilmarnock.

Class 546.—*Scotch Grey Bantam Hens or Pullets.*

1127 I. & 1129 II.—James McCrae, 13, Thomson Street, Kilmarnock.
1126 III. & 1128 R. N.—Capt. E. H. Morgan, Ingleside, Talbot Road, Wembley.

Class 547.—*Frizzle Bantam Cocks or Cockerels.*

1133 I. & 1135 III.—Allen Hobson, Edge Hill, Penistone.
1131 II.—Major G. T. Williams, Tredrea, Perranwell Station.
1130 R. N.—Sir Claud Alexander, Bt., Faygate Wood, Faygate.
H. C.—1134. C.—1132.

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[1] The birds entered in Classes 537 and 538—White Turkeys—were all absentees.

Class 548.—*Frizzle Bantam Hens or Pullets.*

1138 I. & 1143 III.—Major G. T. Williams, Tredrea, Perranwell Station.
1141 II.—Allen Hobson, Edge Hill, Penistone.
1139 R. N.—Sir Claud Alexander, Bt., Faygate Wood, Faygate.
H. C.—1144.

Class 549.—*Old English Game Bantam Cocks or Cockerels.*

1151 I.—Sidney Newton, 16, Mansfield Road, Mansfield Woodhouse.
1147 II.—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
1146 III. & 1150 R. N.—Miss C. E. Davies, Mapleton, Edenbridge.
H. C.—1149. C.—1148.

Class 550.—*Old English Game Bantam Hens or Pullets.*

1156 I.—Dr. J. Perry Walker, Tynehouse, St. Paul's Road, Peterborough.
1154 II.—S. H. Gregory, The Jumble Farm, Glossop.
1161 III.—W. H. Price, Higher Bibbington, Dove Holes, Stockport.
1159 R. N.—A. R. Cunliffe-Owen, Excelsior Poultry Farm, Loughborough.
H. C.—1160. C.—1157.

Class 551.—*Indian Game Bantam Cocks or Cockerels.*

1168 I.—A. H. Brownson, The Gorse Farm, Nuneaton.
1166 II.—Lord Dewar, Homestall, East Grinstead.
1165 III.—W. R. Beer, Pill Farm, Barnstaple.

Class 552.—*Indian Game Bantam Hens or Pullets.*

1169 I.—P. W. Symons, Whitson Farm, Lewdown.
1173 II. & 1170 R. N.—A. H. Brownson, The Gorse Farm, Nuneaton.
1172 III.—W. R. Beer, Pill Farm, Barnstaple.

Class 555.—*Black or White Rose Comb Bantam Cocks or Cockerels.*

1175 I.—J. E. Fawcett, Abinger Common, Dorking.

Class 556.—*Black or White Rose Comb Bantam Hens or Pullets.*

1176 I.—Cater and Booth, Leabrooks, Alfreton.

Class 557.—*Barbu d'Anvers Bantam Cocks or Cockerels.*

1180 I.—Mrs. E. F. Hurt, South Darley, Matlock.
1179 II. & 1181 R. N.—Kenneth Ward, Tweed Villa, Haxby, York.
1178 III.—W. Grindey, Green Lane, Clifton, Ashbourne.
H. C.—1177.

Class 558.—*Barbu d'Anvers Bantam Hens or Pullets.*

1184 I.—Richard Terrot, Burchetts Green Cottage, Maidenhead.
1186 II.—Mrs. E. F. Hurt, South Darley, Matlock.
1182 III.—Miss M. Webb, 20, Moorland Road, Leeds.
1183 R. N.—Kenneth Ward, Tweed Villa, Haxby, York.
H. C.—1185. C.—1187.

Class 559.—*Cochin or Pekin Bantam Cocks or Cockerels.*

1188 I.—Lord Dewar, Homestall, East Grinstead.
1189 II.—Frank E. Rice, Arbury Nurseries, Cambridge.
1190 III.—Frank Smith, West End Villa, Pinxton, Nottingham.

Class 561.—*Japanese Bantam Cocks or Cockerels.*

1193 I.—Alfred E. W. Darby, Adcote, Shrewsbury.
1194 II. & 1191 R. N.—Major G. T. Williams, Treadrea, Perranwell Station.
1192 III.—Mrs. A. M. Moreton, Shobnall Grange, Burton-on-Trent.

Class 562.—*Japanese Bantam Hens or Pullets.*

1199 I & 1197 II.—Major G. T. Williams, Tredrea, Perranwell Station.
1198 III.—Alfred E W Darby, Adcote, Shrewsbury.
1196 R. N.—Matthew Bell, Agra House, Haxby, York.
H. C.—1195.

Class 563.—*Bantam Cocks or Cockerels, any other variety.*

1200 I.—W. H. Jackson, 157, Waterloo Street, Burton-on-Trent.

Class 564.—*Bantam Hens or Pullets, any other variety.*

1202 I.—R. Scott Miller, Clydeneuk, Uddingston, Glasgow.
1204 II.—Major G. T. Williams, Tredrea, Perranwell Station.
1203 III.—W. H. Jackson, 157, Waterloo Street, Burton-on-Trent.

RABBITS.

Special Prizes were given in the Rabbit Classes by the following Clubs:—National Flemish Giant Rabbit, National English Rabbit, Universal Angora Rabbit, Tan Rabbit, and National Polish Rabbit.

Belgian Hares.[1]

Class 565.—*Belgian Hare Adult Bucks.*

2 **I.** (**20***s*.)—F. W. Paige, Rostrevor, Histon, Cambridge.
4 **II.** (**15***s*.)—John Oliveand, Third House Farm, Woodhorn, Ashington.
9 **III.** (**10***s*.)—J. Waters, Tredwell Farm, Bickley.
5 **IV.** (**5***s*.)—Egerton Bourne, 173, Broadway, Southend.
1 **R. N.**—Wilkinson and Bunting, 17, Hastings Street, Derby.

Class 566.—*Belgian Hare Adult Does.*

16 **I** (**20***s*. **& Champion.**[2])—J. Baragwanath, 88, Alcester Road, Moseley, Birmingham.
10 **II.** (**15***s*.)—T. S. Ward, 21, South Parade, Spalding.
11 **III.** (**10***s*.)—Wilkinson and Bunting, 17, Hastings Street, Derby.
18 **IV.** (**5***s*.)—J. Waters, Tredwell Farm, Bickley.
H. C.—14. **C.**—17.

Class 567.—*Belgian Hare Bucks, under* 6 *months.*

24 **I.** (**20***s*.)—J. Waters, Tredwell Farm, Bickley.
19 **II.** (**15***s*.)—Wilkinson and Bunting, 17, Hastings Street, Derby.
20 **IV.** (**5***s*.)—R. Rowland, 169, High Street, Hampton Hill.

Class 568.—*Belgian Hare Does, under* 6 *months.*

29 **I.** (**20***s*. **& R. N. for Champion** [2]) & 25 **III.** (**10***s*.)—Wilkinson and Bunting, 17, Hastings Street, Derby.
28 **II.** (**15***s*.)—G. F. Lamb, 4, Cromwell Terrace, Huntingdon.
30 **IV.** (**5***s*.)—J. Waters, Tredwell Farm, Bickley.

Class 569.—*Belgian Hare Bucks, under* 4 *months.*

37 **I.** (**20***s*.)—J. Waters, Tredwell Farm, Bickley.
32 **II.** (**15***s*.)—F. W. Paige, Rostrevor, Histon, Cambridge.
34 **III.** (**10***s*.)—Doggett and Andrews, School Hill, Histon, Cambridge.
31 **IV.** (**5***s*.)—A. J. Langran, Pages Close, Histon, Cambridge.

Class 570.—*Belgian Hare Does, under* 4 *months.*

41 **I.** (**20***s*.)—Jones and Son, 20, Hartley Street, Boston.
43 **II.** (**15***s*.)—J. Waters, Tredwell Farm, Bickley.
40 **III.** (**10***s*.)—F. W. Paige, Rostrevor, Histon, Cambridge.
38 **IV.** (**5***s*.)—Doggett and Andrews, School Hill, Histon, Cambridge.
42 **R. N.**—G. F. Lamb, 4, Cromwell Terrace, Huntingdon.

Flemish Giants.[3]

Class 571.—*Flemish Giant Adult Bucks.*

44 **I.** (**10***s*. **& R. N. for Special**) & 46 **II.** (**15***s*.)—C. Wren, 30, Flemish Villas, Hampton Wick.
45 **III.** (**10***s*.)—Thomas Mawdsley, Market Hall, Southport.

Class 572.—*Flemish Giant Adult Does.*

47 **I.** (**20***s*. **& Special.**)—T. W. Smith, 152, Acre Lane, Brixton, London, S.W.
53 **II.** (**15***s*.)—C. Wren, 30, Flemish Villas, Hampton Wick.
51 **III.** (**10***s*.)—Thomas Mawdsley, Market Hall, Southport.
52 **IV.** (**5***s*.)—J. Harling Jones, The School, Fazoley, Tamworth.

Class 573.—*Flemish Giant Bucks or Does, under* 6 *months.*

60 **I.** (**20***s*. **& Special**), & 56 **III.** (**10***s*.)—C. Wren, 30, Flemish Villas, Hampton Wick.
59 **II.** (**15***s*.)—Joseph Colgrove, Winslow.
54 **IV.** (**5***s*.)—Frederick Grevett, The Pines, Slindon Common, Arundel.
58 **R. N.**—J. Harling Jones, The School, Fazeley, Tamworth.
H. C.—57.

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[1] The Fourth Prizes in these Classes were given by the National Belgian Hare Club.

[2] The Newberry Challenge Trophy given by the National Belgian Hare Club for the best Belgian Hare in Classes 565–570.

[3] The Fourth Prizes in these Classes were given by the National Flemish Giant Rabbit Club.

Class 574.—*Flemish Giant Bucks or Does, under 4 months.*

63 I. (20*s.* & R. N. for Special) & 65 II. (15*s.*)—C. Wren, 30, Flemish Villas, Hampton Wick.
62 III. (10*s.*)—T. W. Smith, 152, Acre Lane, Brixton, London, S.W.
61 IV. (5*s.*)—Frederick Grevett, The Pines, Slindon Common, Arundel.
64 R. N.—Thomas Maudsley, Market Hall, Southport.

English.

Class 575.—*English Black or Blue Adult Bucks or Does.*

70 I. (20*s.* & R.N. for Special.)—John Sherborne, 40, Redlands Road, Reading.
66 II. (15*s.*)—William F. E. S. Stephens, 17, Elers Road, Ealing.
68 III. (10*s.*) & 71 R. N.—George A. Drake, Western Rabbitries, Braunton.

Class 576.—*English Adult Bucks or Does, any other colour.*

74 I. (20*s.* & Special.)—Jones and Son, 20, Hartley Street, Boston.
72 II. (15*s.*)—Percy Ashley, 57, Blackburn Road, Bolton.
75 III. (10*s.*)—George A. Drake, Western Rabbitries, Braunton.
73 R. N.—Henry Deitz, 110, Milburn Road, Ashington.

Class 577.—*English Black or Blue Bucks or Does, under 5 months.*

78 I. (20*s.* & R. N. for Special) & 81 R. N.—J. Johnson, Shadforth, Durham.
79 II. (15*s.*)—Johnson and Bellamy, 221, Freeman Street, Grimsby.

Class 578.—*English Bucks or Does, any other colour, under 5 months.*

85 I. (20*s.* & Special)—Johnson and Bellamy, 221, Freeman Street, Grimsby.
84 II. (15*s.*)—Jones and Son, 20, Hartley Street, Boston.
87 III. (10*s.*)—H. J. Cox and Son, 37, Portland Street, Boston.
83 R. N.—Henry Deitz, 110, Milburn Road, Ashington.

Dutch.[1]

Class 579.—*Dutch Black or Blue Adult Bucks or Does.*

93 I. (20*s.*)—Cook and Berry, 1, Egerton Road, Bishopston, Bristol.
95 II. (15*s.*)—J. W. Handford, 50, Thornton Lodge Road, Huddersfield.
100 III. (12*s.* 6*d.*)—J. Bullivant, Homer Lofts, Lavenham.
103 IV. (7*s.* 6*d.*)—Thompson and Spurgeon, 75, Whitefield Terrace, Heaton, Newcastle-on-Tyne.
98 R. N.—G. Preston, Cirencester.
H. C.—102, 102A. C.—97.

Class 580.—*Dutch Adult Bucks or Does, any other colour.*

108 I. (20*s.*)—John Grice, 24, Brynn Street, St. Helens.
109 II. (15*s.*)—J. A. Elsom, 46, Cowgate, Peterborough.
110 III. (12*s.* 6*d.*)—Harry Tarbox, Dunchurch Road, Rugby.
114 IV. (7*s.* 6*d.*)—Frank Record, 72, Barlow Street, Derby.
111 R. N.—Sutherley Bros., Whitehall Buildings, Tredegar.
H. C.—106. C.—115.

Class 581.—*Dutch Black or Blue Bucks or Does, under 4 months.*

131 I. (20*s.*)—Thompson Bros., 34, Sidney Street, Lincoln.
117 II. (15*s.*)—Cook and Berry, 1, Egerton Road, Bishopston, Bristol.
121 III. (12*s.* 6*d.*)—J. W. Handford, 50, Thornton Lodge Road. Huddersfield.
128 IV. (7*s.* 6*d.*)—G. Preston, Cirencester.
129 R. N.—C. A. Pegg, 44, Park Road, Coalville.
H.C.—119.

Class 582.—*Dutch Bucks or Does, any other colour, under 4 months.*

145 I. (20*s.*)—Eady Bros., Windsor Street, Burbage, Hinckley.
133 II. (15*s.*)—W. H. Jackson, 157, Waterloo Street, Burton-on-Trent.
136 III. (12*s.* 6*d.*)—John Grice, 24, Brynn Street, St. Helens.
142 IV. (7*s.* 6*d.*)—Miss Enid Mynors, Station Street, Ashbourne.
132 R. N.—Cook and Berry, 1, Egerton Road, Bishopston, Bristol.
H. C.—141.

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[1] 2*s.* 6*d.* towards each Third Prize, and the whole of each Fourth Prize were given by the United Kingdom Dutch Rabbit Club.

Angoras.

Class 583.—*White Angora Adult Bucks or Does.*

151 I. (20*s*. & Special) & 156 R. N.—JAMES HOLDEN, 41, Radford Street, Darwen.
155 II. (15*s*. & R. N. for Special.)—J. W. DALE, 15, Bright Street, West Hartlepool.
154 III. (10*s*.)—MRS. RAYMOND READE, The Manor House, Stutton, Ipswich.
H. C.—149.

Class 584.—*White Angora Bucks or Does, under* 4 *months.*

162 I. (20*s*.)—T. A. FORSTER, 5, Mount View West, Ryton-on-Tyne.
158 II. (15*s*.)—J. W. HUTCHINSON, 117, Stone Street, Newcastle-on-Tyne.
157 III. (10*s*.)—ARTHUR WRIGHT, Ullesthorpe, Lutterworth.
163 R. N.—J. FLETCHER, 10, Aubrey Street, Rochdale.
H. C.—160. C.—159.

Class 585.—*Angora Adult Bucks or Does, any other colour.*

165 I. (20*s*. & Special)—ARTHUR WRIGHT, Ullesthorpe, Lutterworth.

Class 586.—*Angora Bucks or Does, any other colour, under* 4 *months.*

168 I. (20*s*.)—ARTHUR WRIGHT, Ullesthorpe, Lutterworth.
170 II. (15*s*.)—MRS. RAYMOND READE, The Manor House, Stutton, Ipswich.

Beverens.[1]

Class 587.—*Blue Beveren Bucks, bred in* 1922.

177 I (20*s*.), 171 III. (10*s*.) & 188 IV. (6*s*.)—MRS. ALICE CHAVASSE, 50, High Street, Sutton Coldfield.
193 II. (15*s*.)—MRS. KER, Heathgate, Bucklebury, Reading.
190 V. (4*s*.)—GEORGE A. FOUNTAIN, Summer Hill, Fakenham.
174 R. N.—GOODCHILD BROS., Hepworth Hall, Halstead.
H. C.—183. C.—184, 197.

Class 588.—*Blue Beveren Does, bred in* 1922.

199 I. (20*s*.) & 203 V. (4*s*.)—MRS. ALICE CHAVASSE, 50, High Street, Sutton Coldfield.
213 II. (15*s*.)—J. G. THOMPSON, Post Office, Esh, Durham.
212 III. (10*s*.)—GEORGE A. FOUNTAIN, Summer Hill, Fakenham.
215 IV. (6.)—J. SHOOTER, 7, Primrose Terrace, Newton, Alfreton.
214 R. N.—W. D. MEWBURN, Overley, Daglingworth, Cirencester.
H. C.—216. C.—198, 202, 210, 211, 223.

Class 589.—*White Beveren Bucks, bred in* 1922.

227 I (20*s*.)—MRS. H. M. RODERICK, 17, Trumpington Street, Cambridge.
225 II. (15*s*.)—A. JOHNSON, Rosemount, Bobling, Sittingbourne.
226 III. (10*s*.)—ARTHUR DOWNS, Larkmans Lane, Earlham, Norwich.
228 IV. (6*s*.)—C. W. SAYER, 63, Westgate Street, Ipswich.

Class 590.—*White Beveren Does, bred in* 1922.

231 I. (20*s*.)—C. W. SAYER, 63, Westgate Street, Ipswich.
232 II. (15*s*.) & 230 IV. (6*s*.)—A. JOHNSON, Rosemount, Bobling, Sittingbourne.
233 III. (10*s*.)—GEORGE A. FOUNTAIN, Summer Hill, Fakenham.
229 V. (4*s*.)—W. A. UPCHURCH, Fairfield, Pirton, Hitchin.

Havanas.[1]

Class 591.—*Havana Bucks, bred in* 1922.

235 I. (20*s*.)—MISS A. M. MOYLAN, Mill House, High Halden, Ashford, Kent.
240 II. (15*s*.)—MRS. ALICE CHAVASSE, 56, High Street, Sutton Coldfield.
239 III. (10*s*.)—H. R. PRESTOE, 51, York Road, Newbury.
243 IV. (6*s*.)—JOHN DRUMMOND, Megginch Castle, Errol, N.B.

Class 592.—*Havana Does, bred in* 1922.

249 I. (20*s*.)—H. R. PRESTOE, 51, York Road, Newbury.
255 II. (15*s*.), 251 III. (10*s*.) & 245 V. (4*s*.)—MRS. L. A. SMITH, 130, Cricklade Street, Cirencester.
254 IV. (6*s*.)—E. C. RICHARDSON, Ecclesbourne, West Byfleet.
248 R. N.—MISS LE ROY LEWIS, Westbury House, Petersfield.
H. C.—253. C. 244, 252.

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[1] The Fourth and Fifth Prizes were given by the Beveren Club.

Chinchillas.[1]

Class 593.—*Chinchilla Bucks, bred in* 1922.

264 **I.** (**20*s*.**)—W. E. Parry, Merton Abbey, Bootle, Liverpool.
261 **II.** (**15*s*.**)—Arthur Wright, Ullesthorpe, Lutterworth.
260 **III.** (**10*s*.**)—C. J. Davies, Culverlands, Lindfield, Haywards Heath.
265 **IV.** (**6*s*.**)—Miss Nellie Handford, 50, Thornton Lodge Road, Huddersfield.
271 **V.** (**4*s*.**)—Mrs. G. M. Soames, Long Buckby Wharf, Rugby.

Class 594.—*Chinchilla Does, bred in* 1922.

282 **I.** (**20*s*.**)—David W. Irving, 11, Chambres Road, Southport.
285 **II.** (**15*s*.**)—C. L. Kay, 50, Northumberland Avenue, Gosforth.
275 **III.** (**10*s*.**)—Capt. W. Brumwell, The White House, Campsea Ashe, Wickham Market.
278 **IV.** (**6*s*.**)—George J. Buller, 37, Bunyan Road, Hitchin.
281 **V.** (**4*s*.**)—John Drummond, Megginch Castle, Errol, N.B.
287 **R. N.**—James Holden, 41, Radford Street, Darwen.

Argenté de Champagne.[1]

Class 595.—*Argenté de Champagne Bucks, bred in* 1922.

292 **I.** (**20*s*.**) & 288 **II.** (**15*s*.**)—Mrs. Alice Chavasse, 56, High Street, Sutton Coldfield.
289 **III.** (**10*s*.**)—W. E. Harpur Mitchell, Balla Mena, Lescudjack, Penzance.
290 **IV.** (**6*s*.**)—Mrs. T. R. Coombes, Cathedral School, Llandaff.
291 **V.** (**4*s*.**)—Mrs. Ker, Heathgate, Bucklebury, Reading.

Class 596.—*Argenté de Champagne Does, bred in* 1922.

294 **I.** (**20*s*.**)—Mrs. Ker, Heathgate, Bucklebury, Reading.
293 **II.** (**15*s*.**)—Mrs. Alice Chavasse, 56, High Street, Sutton Coldfield.

Silvers.[2]

Class 597.—*Silver Grey Adult Bucks or Does.*

301 **I.** (**20*s*.**)—Fred Barlow, 85, Chaffinch Road, Beckenham.
307 **II.** (**15*s*.**) & 300 **IV.** (**5*s*.**)—Cook and Oughtred, Springfield, West Hartlepool.
303 **III.** (**10*s*.**)—Walter Gell, 12, Florence Street, Lincoln.
304 **R. N.**—A. G. Green, 40, Heath Road, Wadsley Bridge, Sheffield.
H. C.—297. **C.**—306.

Class 598.—*Silver Grey Bucks or Does, under 5 months.*

315 **I.** (**20*s*.**)—Cook and Oughtred, Springfield, West Hartlepool.
313 **II.** (**15*s*.**)—Fred Barlow, 85, Chaffinch Road, Beckenham.
316 **III.** (**10*s*.**)—A. G. Green, 40, Heath Road, Wadsley Bridge, Sheffield.
312 **IV.** (**5*s*.**)—F. W. Western, Holme Grove, Biggleswade.
310 **R. N.**—Henry Thompson, 24, Cross Street, Spalding.
H. C.—314.

Class 599.—*Silver Fawn Adult Bucks or Does.*

321 **I.** (**20*s*.**)—E. W. Easton, 35, Caldecote Street, Rugby.
325 **II.** (**15*s*.**)—J. W. Brown, 8, Graham Terrace, New Shildon.
322 **IV.** (**5*s*.**)—F. W. Western, Holme Grove, Biggleswade.
320 **R. N.**—Alf Rose, Lindum Rabbitry, Brigg.
H. C.—323.

Class 600.—*Silver Fawn Bucks or Does, under 5 months.*

331 **I.** (**20*s*.**)—J. W. Brown, 8, Graham Terrace, New Shildon.
327 **II.** (**15*s*.**)—E. W. Easton, 35, Caldecote Street, Rugby.
329 **III.** (**10*s*.**)—F. W. Western, Holme Grove, Biggleswade.
330 **IV.** (**5*s*.**) & 332 **R. N.**—Alf Rose, Lindum Rabbitry, Brigg.
H. C.—328. **C.**—326.

Class 601.—*Silver Brown Adult Bucks or Does.*

335 **I.** (**20*s*.**)—H. J. Hancox, Old School, Rhos, Pontardawe.
336 **II.** (**15*s*.**)—H. Fowkes, 50, Melbourne Street, Bedford.
333 **III.** (**10*s*.**)—Walker and Owen, 60, Regent Street, Weston-super-Mare.
334 **IV.** (**5*s*.**)—Mrs. A. G. Boxall, Melcombe, Eastwood Road, Bramley, Guildford.

Class 602.—*Silver Brown Bucks or Does, under 5 months.*

337 **I.** (**20*s*.**)—H. J. Hancox, Old School, Rhos, Pontardawe.

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[1] The Fourth and Fifth Prizes were given by the Beveren Club.

[2] The Fourth Prizes were given by the National Silver Rabbit Club.

Lops.

Class 603.—*Lop Bucks or Does, any age.*

342 **I.** (20*s*.)—G. A. Walker, Rosine House, Coleorton, Leicester.
339 **II.** (15*s*.)—Fred Giles, 66, Hurst Street, Oxford.
343 **III.** (10*s*.)—Tarbox and Noon, Dunchurch Road, Rugby.
341 **R. N.**—Thompson and Spurgeon, 75, Whitefield Terrace, Heaton, Newcastle-on-Tyne.

Tans.

Class 604.—*Tan Adult Bucks or Does.*

344 **I.** (20*s*. **& Special.**)—Samuel Allwood, 96, Crewe Street, Derby.
348 **III.** (10*s*.)—W. J. Childs, 299, Mill Road, Romsey Town, Cambridge.
345 **R. N.**—H. Binns, 56, High Street, Ramsey.
H. C.—347.

Class 605.—*Tan Bucks or Does, under 5 months.*

350 **I.** (20*s*. **& R. N. for Special.**)—F. G. Woodgate, 37, Strover Road, Gillingham, Kent.
349 **II.** (15*s*.)—James W. Bell, 5, Moor View, Thornley, Wheatley Hill.
352 **III.** (10*s*.)—W. J. Childs, 299, Mill Road, Romsey Town, Cambridge.
354 **R. N.**—Mrs. H. Hill, 356, Main Road, Darnall, Sheffield.
H. C.—351. **C.**—353.

Polish.

Class 606.—*Polish Bucks or Does, under 6 months.*

355 **I.** (20*s*. **& Special**), 357 **IV.** (5s.[1]) & 362 **R. N.**—Dr. Waugh, Glindyne, Prenton Hill, Birkenhead.
361 **II.** (15*s*. **& R. N. for Special.**)—J. Meynell, 48, North Road, Darlington.
365 **III.** (10*s*.)—H. Dancer, Church Street, Leatherhead.
H. C.—360. **C.**—359.

FARM AND DAIRY PRODUCE OF THE UNITED KINGDOM.

Butter.

Class 607.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of Channel Island, Devon or South Devon Cattle and their crosses.*

8 **I.** (£4.)—Mrs. Heywood, The Barton, Loxbeare, Tiverton.
11 **II.** (£2.)—J. Pierpont Morgan, Wall Hall, Aldenham, Watford.
5 **III.** (£1.)—W. C. Dunkerley, Bowdon View Farm, Mere, Knutsford.
14 **R. N.**—Mrs. John Way, West Bridge, Bishopsnympton, South Molton.
H. C.—3, 7. **C.**—1.

Class 608.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds, from the milk of cattle of any breed or cross other than those mentioned in Class* 607.

25 **I.** (£4.)—Mrs. M. Oxenham, Burntown, Tavistock.
16 **II.** (£2.)—Mrs. A. S. Bowering, Kingston Pastures, Arrington, Royston.
20 **III.** (£1.)—Tresham Gilbey, Whitehall, Bishops Stortford.
26 **R. N.**—Miss S. H. Robinson, Red House Farm, Liverton, Loftus.
H. C.—27. **C.**—17.

Class 609.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses.*

40 **I.** (£4.)—J. Pierpont Morgan, Wall Hall, Aldenham, Watford.
36 **II.** (£2.)—Mrs. Heywood, The Barton, Loxbeare, Tiverton.
35 **III.** (£1.)—Mrs. J. H. Hearn, Sydenham Damarel, Tavistock.
43 **R. N.**—Mrs. John Way, West Bridge, Bishopsnympton, South Molton.
H. C.—33, 34.

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[1] Given by the National Polish Rabbit Club.

Class 610.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds, from the milk of cattle of any breed or cross other than those mentioned in Class* 609.

56 I. (£4.)—Mrs. M. Oxenham, Burntown, Tavistock.
48 II. (£2.)—Mrs. A. M. Cooke, The Lawns, Little Downham, Ely.
52 III. (£1.)—Tresham Gilbey, Whitehall, Bishops Stortford.
H. C.—57. C.—49.

Class 611.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds in the most attractive marketable designs.*

70 I. (£4.)—Mrs. John Way, West Bridge, Bishopsnympton, South Molton.
67 II. (£2.)—J. Pierpont Morgan, Wall Hall, Aldenham, Watford.
69 III. (£1.)—Miss S. H. Robinson, Red House Farm, Liverton, Loftus.
63 R. N.—Laurence Currie, Minley Manor, Farnborough.
H. C.—62. 64.

Class 612.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds, and packed in non-returnable boxes for transmission by rail or parcel post.*

75 I. (£4.)—Miss S. H. Robinson, Red House Farm, Liverton, Loftus.
76 II. (£2.)—Mrs. John Way, West Bridge, Bishopsnympton, South Molton.
71 III. (£1.)—The Egginton Dairy Co., Ltd., Egginton Junction, Derby.
73 R. N.—Miss M. E. Gordon, 51a, Ashby Road, Loughborough.

Cheese.

Made in 1922.

Class 613.—*Two Cheshire Cheeses (Coloured), not less than* 40 *lb. each.*

80 I. (£5.)—G. E. Richards, Sandford Hall, Oswestry.
77 II. (£3.)—H. Edwards and Son, Ltd., The Creameries, Market Drayton.
78 III. (£2.)—W. H. Hobson, Woodley Hall, Faddiley, Nantwich.
79 R. N.—Charles E. Parton, Houghton Hall Farm, Tarporley.

Class 614.—*Two Cheshire Cheeses (Uncoloured), not less than* 40 *lb. each.*

83 I. (£5.)—G. E. Richards, Sandford Hall, Oswestry.
82 II. (£3.)—Charles E. Parton, Houghton Hall Farm, Tarporley.
81 III. (£2.)—W. H. Hobson, Woodley Hall, Faddiley, Nantwich.

Class 615.—*Two Cheddar Cheeses, not less than* 50 *lb. each.*

85 I. (£5.)—P. H. Francis, Millers Farm, Upton Noble, Bruton.
89 II. (£3.)—W. F. Turner, Home Farm, Capel St. Andrew, Woodbridge.
88 III. (£2.)—M. M. Tabor, Barrow Farm, North Barrow, Sparkford.
87 R. N.—A. Stone and Son, Hurlingpot, Doulting, Shepton Mallet.

Class 616.—*Two Cheddar Truckles.*

95 I. (£4.)—Mrs. Millard, Cullum End Farm, Leckhampton, Cheltenham.
91 II. (£2.)—Alfred Banwell, Lewis Drove, Godney, Wells.
97 III. (£1.)—A. Stone and Son, Hurlingpot, Doulting, Shepton Mallet.
94 R. N.—Mrs. Evans, Crickleaze House, Chard.

Class 617.—*Two Staffordshire or Derbyshire Cheeses.*

100 I. (£4.)—Longford Farms, Ltd., Longford, Derby.

Class 618.—*Two Leicestershire Cheeses.*

101 I. (£4.)—East Anglian Institute of Agriculture, Chelmsford.

Class 619.—*Two Stilton Cheeses.*

105 I. (£4.)—Tuxford and Nephews, Thorpe End Dairy, Melton Mowbray.
106 II. (£2.)—Fred Webster, Shoby Priory, Melton Mowbray.
107 III. (£1.)—The Misses M. F. and J. Webster, The Dairy, Saxelbye, Melton Mowbray.
103 R. N.—John O'Gaunt Creamery Co., Ltd., Melton Mowbray.

Class 620.—*Two Wensleydale Cheeses (Stilton shape).*

111 I. (£4.)—Alfred Rowntree, The Dairy, Coverham, Middleham.
109 II. (£2.)—Miss Rachel James, Llancayo, near Usk.
110 III. (£1.)—Mrs. Plews, Low Green Farm, Romaldkirk, Darlington.

Class 621.—*Two Caerphilly Cheeses.*

113 I. (£4.)—Miss Cilian Edwards, Cefn Poeth Farm, Lanvedw, Cardiff.
114 II. (£2.)—Miss Rachel James, Llancayo, near Usk.
115 III. (£1.)—David Thomas, Tynewydd Farm, Coity, Bridgend.
116 R. N.—West of England Creamery, Highbridge.

Class 622.—*Two small Cheeses, not exceeding* 6 *lb. each, of Cheddar or Cheshire character.*

123 I. (£3.)—Mrs. Millard, Cullum End Farm, Leckhampton, Cheltenham.
117 II. (£2.)—Mrs. A. Blatchford, Ashleigh Farm, Lifton.
120 III. (£1.)—Mrs. E. M. Evans, Welshes Farm, Clatworthy, Wiveliscombe.
121 R. N.—Mrs. Evans, Crickleaze House, Chard.

Class 623.—*Two Small Cheeses, not exceeding* 6 *lb. each, of Stilton or Wensleydale character.*

128 I. (£3.)—The Misses M. F. and J. Webster, The Dairy, Saxelbye, Melton Mowbray.
124 II. (£2.)—Miss Elsie G. Cook, Heath House, Tetsworth.
125 III. (£1.)—Miss Rachel James, Llancayo, near Usk.
127 R. N.—Alfred Rowntree, The Dairy, Coverham, Middleham.

Class 624.—*Two Soft Cheeses, made from Whole Milk.*

132 I. (£3.)—East Anglian Institute of Agriculture, Chelmsford.
135 II. (£2.)—Miss Annie Prichard, The Dairy, Welbeck, Worksop.
130 III. (£1.)—Miss Elsie G. Cook, Heath House, Tetsworth.
131 R. N.—C. Dampier Whetham, Hilfield, Evershot.

Class 625.—*Two Soft Cheeses, made from Cream, without the addition of Rennet.*

142 I. (£3.)—Miss M. E. Gordon, 51a, Ashby Road, Loughborough.
141 II. (£2.)—Mrs. J. T. Garbutt, Street Farm, Loftus.
143 III. (£1.)—W. R. Greenshields, Westhaye, Hawkchurch, Axminster.
147 R. N.—Alfred Rowntree, The Dairy, Coverham, Middleham.
H. C.—136. C.—137.

Cider.

Class 626.—*Six Bottles of Dry Cider made in* 1921.

150 I. (£3) & 151 II. (£2.)—Sir Ian Heathcoat Amery, Bt., Knightshayes Court, Tiverton.
155 III. (£1.)—Joseph M. Parry and Co., Ltd., Leominster.
153 R. N.—Herbert J. Davis, Goldsborough Farm, Sutton Montis, Sparkford.
H. C.—152.

Class 627.—*Six Bottles of Sweet Cider made in* 1921.

168 I. (£3.)—Pullin Bros., Compton Greenfield, near Bristol.
166 II. (£2.)—Joseph M. Parry and Co., Ltd., Leominster.
164 III. (£1) & 163 R. N.—Herbert J. Davis, Goldsborough Farm, Sutton Montis, Sparkford.
H. C.—160. C.—161.

Class 628.—*Six Bottles of Cider made previous to* 1921.

174 I. (£3) & 173 R. N.—Capt. F. W. Crawshay, Hempnall Cider Factory, Hempnall . Norwich.
179 II. (£2.)—Yeomans Bros., Canon Pyon, Hereford.
177 III. (£1.)—Joseph M. Parry and Co., Ltd., Leominster.

Bottled Fruits.

Class 629.—*Six Bottles of Fruit, of not less than Four Varieties.*

181 I. (£3.)—George W. Weatherill, Belmont, Stokesley.
180 II. (£2.)—Miss Jane Blackburn, College Square, Stokesley.

Class 630.—*Six Bottles of Soft Fruit, of not less than Four Varieties.*

182 I. (£3.)—George W. Weatherill, Belmont, Stokesley.

Class 631.—*Four Bottles of Fruit, of not less than Three Varieties.*

183 I. (30*s.*)—Mrs. R. Fletcher Hearnshaw, Fox Hill, Burton Joyce, Nottingham.
184 II. (20*s.*)—George W. Weatherill, Belmont, Stokesley.

Class 632.—*Four Bottles of Soft Fruit, of not less than Three Varieties.*

185 {Equal II.} George W. Weatherill, Belmont, Stokesley.
186 { 20*s.* } Mrs. R. Fletcher Hearnshaw, Fox Hill, Burton Joyce, Nottingham

Class 633.—*Two Bottles of Rhubarb.*

187 **I.** (£1.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham

Bottled Vegetables.

Class 634.—*Six Bottles of Vegetables, of not less than Four Varieties.*

188 **I.** (30*s*.)—MRS. R. FLETCHER HEARNSHAW, Fox Hill, Burton Joyce, Nottingham.

Wool.[1]

Of 1922 *Clip.*

First Prize, £3, Second Prize, £2, Third Prize, £1, in each class.

Class 635.—*Three Fleeces of Oxford Down Wool.*

193 **I.** & 192 **III.**—H. W. STILGOE, The Grounds, Adderbury, Banbury.
190 **II.** & 189 **R. N.**—HENRY AKERS AND CO., Moat House, Black Bourton, Clanfield.

Class 636.—*Three Fleeces of Shropshire Wool.*

194 **I.**—R. E. BIRCH, Maes Elwy, St. Asaph.
196 **II.**—E. CRAIG TANNER, Eyton-on-Severn, Shrewsbury.

Class 637.—*Three Fleeces of Southdown Wool.*

200 **I.** & 201 **III.**—LADY LUDLOW, Luton Hoo, Luton.
202 **II.**—J. PIERPONT MORGAN, Wall Hall, Aldenham, Watford.
197 **R. N.**—THE REV. C. H. BROCKLEBANK, Bartlow House, Cambridge.

Class 638.—*Three Fleeces of Hampshire Down Wool.*

208 **I.** & 207 **II.**—WILLIAM TODD, The Grange, Little Ponton, Grantham.
204 **III.**—MAJOR J. A. MORRISON, D.S.O., Basildon Park, Reading.
205 **R. N.**—GEORGE PHILIPPI, Crawley Court, Winchester.

Class 639.—*Three Fleeces of Suffolk Wool.*

212 **I.**—FREDERICK M. L. SLATER, Weston Colville, Cambridge.
209 **II.**—R. BURRELL, Westley Hall, Bury St. Edmunds.
213 **III.**—FRANK E. SLATER, Weston Colville Hall, Cambridge.
210 **R. N.**—THE EXORS. OF THE LATE SIR ERNEST CASSEL, Carlton Grange, Brinkley, Newmarket.

Class 640.—*Three Fleeces of Dorset Horn Wool.*

214 **I.** & 215 **II.**—ALFRED READ, Lower Farm, Hilton, Blandford.

Class 641.—*Three Fleeces of Ryeland Wool.*

222 **I.** & 221 **II.**—DAVID J. THOMAS, Talachddu, Brecon.
218 **III.** & 219 **R. N.**—F. W. MORRIS, Brynderwen Farm, Llangasty, Talyllyn.

Class 642.—*Three Fleeces of Kerry Hill (Wales) Wool.*

223 **I.**—BENJAMIN ALDERSON, Glanmiheli, Kerry, Mont.
225 **II.**—THE DUKE OF WESTMINSTER, G.C.V.O., D.S.O., Eaton Hall, Chester.
224 **III.**—ROBERT E. PARKER, Easton, Norwich.

Class 643.—*Three Fleeces of Leicester Wool.*

227 **I.** & 226 **III.**—GEORGE HARRISON, Gainford Hall, Darlington.
228 **II.**—C. H. SIMPSON AND SONS, Castle House, Hunmanby.

Class 644.—*Three Fleeces of Border Leicester Wool.*

229 **I.**—R. G. MURRAY AND SON, Spittal, Biggar, N.B.

Class 645.—*Three Fleeces of Wensleydale Wool.*

230 **I.**—JOHN W. GREENSIT, Holme-on-Swale, Thirsk.

Class 646.—*Three Fleeces of Kent or Romney Marsh Wool, from Rams of any age*

233 **I.**—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
231 **II.**—L. H. AND G. W. FINN, Westwood Court, Faversham.

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[1] The Second and Third Prizes in Classes 635 to 651 were given by the respective Flock Book Societies.

Class 647.—*Three Fleeces of Kent or Romney Marsh Wool, from Ewe Tegs.*

234 I.—L. H. and G. W. Finn, Westwood Court, Faversham.
235 II.—The Earl of Guilford, Waldershare Park, Dover.
236 III.—J. Egerton Quested, The Firs, Cheriton, Kent.

Class 648.—*Three Fleeces of Kent or Romney Marsh Wool, excluding Rams and Ewe Tegs.*

237 I.—L. H. and G. W. Finn, Westwood Court, Faversham.
240 II.—J. Egerton Quested, The Firs, Cheriton, Kent.
239 III.—The Earl of Guilford, Waldershare Park, Dover.

Class 649.—*Three Fleeces of Cotswold Wool.*

243 I.—William Garne, Ablington, Fairford.
241 II.—Lt.-Col. E. P. Brassey, Manor Farm, Upper Slaughter.
242 III.—Thomas Brown and Son, Marham Hall, King's Lynn.

Class 650.—*Three Fleeces of Dartmoor Wool.*

246 I. & 245 II.—John H. Glover, Dalemore Farm, Cornwood.

Class 651.—*Three Fleeces of Exmoor Horn Wool.*

247 I.—P. Everard, Miltons, Dulverton.

HORTICULTURAL EXHIBITION.

Class 1.—*Groups of Miscellaneous Plants.*

1 I. (£45.)—James Cypher and Sons, Cheltenham.
2 II. (£40.)—W. A. Holmes, West End Nurseries, Chesterfield.

Class 2.—*Collections of Orchids.*

4 I. (£12.)—James Cypher and Sons, Cheltenham.
H. C.—3.

Class 3.—*Collections of Delphiniums.*

5 I. (£6.)—Blackmore and Langdon, Twerton-on-Avon, Bath.

Class 4.—*Groups of Tuberous Begonias in Pots.*

6 I. (£30.)—Blackmore and Langdon, Twerton-on-Avon, Bath.

Class 5.—*Collections of Hardy Perennial Plants and Cut Blooms.*

7 I. (£30.)—William Artindale and Son, Nether Green Nurseries, Sheffield.
9 II. (£25.)—Harkness & Co., Grange Nurseries, Bedale.
8 III. (£20.)—G. Gibson and Co., Leeming Bar, Bedale.

Class 6.—*Collections of Cut Sprays of Tree Carnations.*

13 I. (£15.)—C. Engelmann, Saffron Walden.
13a II. (£10.)—Stewart Low and Co., Bush Hill Park, Enfield.

Class 7.—*Collections of Cut Sprays of Border Carnations.*

14 I. (£15.)—H. Lakeman, Thornton Heath.

Class 8.—*Collections of Sweet Peas.*

15a I. (£10.)—Robert Bolton and Son, Baythorne End, Halstead.
15b II. (£8.)—E. W. King and Co., Coggeshall, Essex.
15c III. (£6.)—J. Stevenson, Poole Road, Wimborne.

Class 9.—*Collections of Cut Roses.*

17b I. (£15.)—Thomas Robinson, Porchester Nurseries, Nottingham.
17 II. (£10.)—A. J. Allen and Co., Bowthorpe Road Nurseries, Norwich.
16 III. (£6.)—W. and J. Brown, The Nurseries, Peterborough.

Exhibits not for Competition.

Large Gold Medals to :—

Alex. Dickson & Sons, Ltd., Howlmark, Newtownards.
Alex. Dickson & Sons, Ltd., Howlmark, Newtownards.
Sutton & Sons, Reading.
James Vert & Sons, Saffron Walden.
Robert Bolton & Son, Baythorne End, Halstead.
Dobbie & Co., Ltd., Nurserymen, Edinburgh.

Gold Medals to :—

King's Acre Nurseries, Ltd., Hereford.
Allwood Bros., Wivelsfield Nurseries, Haywards Heath.
Benjamin R. Cant & Sons, Colchester.
C. Engelmann, Saffron Walden.
R. Wallace & Co., The Old Gardens, Tunbridge Wells.
John Forbes (Hawick), Ltd., Buccleuch Nurseries, Hawick.
Andrew Ireland & Hitchcock, Marks Tey.
Laxton Bros., Bedford.
H. Lakeman, Thornton Heath.
R. C. Notcutt, The Nursery, Woodbridge.

Silver-Gilt Badges to :—

J. Burrell & Co., Cambridge.
Bakers, The Nurseries, Wolverhampton.
H. N. Ellison, 5, Bull Street, West Bromwich.
Keith, Luxford & Co., Sheering Nurseries, Harlow.
Sir Carl Meyer, Shortgrove, Newport, Essex.
Edward Webb & Sons, Wordsley, Stourbridge.
Miss S. S. Thompson, 58, Alfred Road, Handsworth, Birmingham.
Wood & Ingram, The Old Nurseries, Huntingdon.
R. H. Bath, Ltd., Floral Farms, Wisbech.
Pulham & Son, Elsenham, near Stansted.

Silver Medals to :—

A. J. & A. Allen, Bowthorpe Road Nurseries, Norwich.
Alfred Edwards, The Nurseries, Fordham, Cambs.
Stuart Low & Co., Bush Hill Park, Enfield.
J. H. Pemberton, Havering-atte-Bower.
Daniels Bros., Ltd., The Royal Nurseries, Norwich.
Isaac House & Son, Westbury-on-Trym.
Mackself, Chalk Hill Nurseries. Reading.
Harkness, Rose Gardens, Hitchin.

PRINCIPAL ADDITIONS TO THE LIBRARY.

[*The name of the donor, or the mode of acquisition, appears in Italics after the title of each work.*]

Allen, Thomas. Profitable Pig Breeding and Feeding. London, 1920 . . . . *Purchased*

Arnold, J. H. Farm Management. New York, 1919 . *Publishers*

Austen, Major E. E. The House Fly. London, 1919. *Trustees of British Museum*

Bailey, L. H. Cyclopedia of Farm Animals. New York, 1922 *Publishers*

——— Cyclopedia of Farm Crops. New York, 1922 . *Publishers*

——— The School Book of Farming. New York, 1920 . *Publishers*

Balfour-Browne, F. Keys to the Orders of Insects. Cambridge, 1920 . . . . *Purchased*

Bedford, Duke of, and **Pickering**, S. Science and Fruit Growing. London, 1919. . . . . *Publishers*

Bennett, H. H. The Soils and Agriculture of the Southern States. New York, 1921 . . . . *Publishers*

Board of Agriculture for Scotland. Annual Reports and Statistics, 1912–1921 . . . . *Board of Agriculture for Scotland*

Boerker, R. H. D. Our National Forests. New York, 1919. *Publishers*

Bond, J. R. Farm Implements and Machinery. London, 1923. *Publishers*

Boyle, J. E. Agricultural Economics. Philadelphia, 1921 . *Publishers*

Brenchley, Winifred E. Weeds of Farm Land. London, 1920. *Purchased*

Brown, E. T. Farm Tractors. London, 1920 . . . *Publishers*

Buller, A. H. R. Essays on Wheat. New York, 1919 . *Publishers*

Bunyard, E. A. A Handbook of Hardy Fruits more commonly grown in Great Britain—Apples and Pears. London, 1920. *Purchased*

Burr, Walter. Rural Organisation. New York, 1921. . *Publishers*

Butler, Frank Hedges. Through Lapland with Skis and Reindeer. London, 1919. . . . . *Author*

Butterfield, K. L. The Farmer and the New Day. New York, 1919 . . . . *Publishers*

Cameron, James. Shorthorns in Central and Southern Scotland. Edinburgh, 1921 . . . . *Purchased*

Carey, A. E., and **Oliver**, F. W. Tidal Lands : A Study of Shore Problems. London, 1918 . . . . . . *Purchased*

Clayton, C. H. J. Land Drainage from Field to Sea. London, 1919 . . . . *Purchased*

Collins, S. H. Chemical Fertilisers and Parasiticides. London, 1920 . . . . *Publishers*

——— Plant Products and Chemical Fertilisers. London, 1918. *Publishers*

Coltman-Rogers, C. Conifers and their Characteristics. London, 1920 . . . . *Author*

Conjoint Board of Scientific Societies. Report on Compulsory Adoption of Metric System. London, 1920 . . *Purchased*

Crosby, C. R., and **Leonard**, M. D. Manual of Vegetable Garden Insects. New York, 1918 . . . . . . *Publishers*

Cruess, W. V. Home and Farm Food Preservation. New York, 1918 . . . . *Publishers*

Davies, C. J. Goat-keeping for Milk Production. London, 1920. *Purchased*

Development Commission. Tenth, Eleventh and Twelfth Reports of the Commissioners. London, 1920, 1921 and 1922 *Purchased*

Duncan, J. F. Agriculture and the Community. Stirling, 1921. *Purchased*

Eckles, C. H., and Warren, G. F. Dairy Farming. New York, 1916 . . . . *Publishers*

Ekblaw, K. J. T. Farm Concrete. New York, 1917 . . *Publishers*

Elwes, H. J. Guide to the Primitive Breeds of Sheep and their Crosses. Edinburgh, 1913 . . . . . . *Purchased*

Erdman, H. E. The Marketing of Whole Milk. New York, 1921. *Publishers*

Ernle, Lord. English Farming, Past and Present. Third Edition, 1922 . . . . *Publishers*

Finland. Trade and Industry of Finland. Helsingfors, 1922. *Publishers*

Folger, J. C., and Thomson, S. M. Commercial Apple Industry of North America. New York, 1921 . . . *Publishers*

Frederiksen, J. D. The Story of Milk. New York, 1919 . *Publishers*

Frohawk, F. W. Birds Beneficial to Agriculture. London, 1919. *Trustees of British Museum*

Gahan, C. J. Furniture Beetles. London, 1920. *Trustees of British Museum*

Gehrs, J. H. Productive Agriculture. New York, 1917 . *Publishers*

Gould, H. P. Peach-growing. New York, 1918 . . *Publishers*

Greaves, Joseph E., M.S., Ph.D. Agricultural Bacteriology. London, 1922 . . . . *Purchased*

Grey, Edwin. Reminiscences, Tales and Anecdotes of the Laboratories, Staff, and Experimental Fields, Rothamsted, 1872–1922. London, 1922 . . . . *Purchased*

G.R.P. Diary of Three Tours in the Northern Province of Ceylon. London, 1909. . . . . . . *Mr. F. Hamlyn Price*

Guthrie, E. S. The Book of Butter. New York, 1920 . *Publishers*

Harris, F. S. The Sugar Beet in America. New York, 1919. *Publishers*

Hasbach, W. A History of the English Agricultural Labourer. Second Edition. London, 1920 . . . . . *Purchased*

Hayes and Garber. Breeding Crop Plants. New York, 1921. *Publishers*

Hedrick, U. P. Cyclopedia of Hardy Fruits. New York, 1922 *Publishers*

——— Manual of American Grape-growing. New York, 1919 . . . . *Publishers*

Herrick, G. W. Insects of Economic Importance. New York, 1920 . . . . *Publishers*

Hinckes, R. T. The Farmer's Outlook. London, 1913. . *Author*

Hinton, M. A. C. Rats and Mice as Enemies of Mankind. London, 1918 . . . . . . *Trustees of British Museum*

Hirst, Stanley. Mites Injurious to Domestic Animals. London, 1922 . . . . *Trustees of British Museum*

Hooper, Cecil H. Fruit Farming. Second Edition. London, 1921 . . . . *Author*

Howell, J. Pryse. An Agricultural Atlas of Wales. Southampton, 1921 . . . . *Mr. C. S. Orwin*

Imperial Bureau of Entomology. Review of Applied Entomology. *Publishers*

International Institute of Agriculture. Annuaire International de Legislation Agricole. Rome, 1922 . *Purchased*

——— Annuaire International de Statistique Agricole, 1909–1921. Rome, 1922 . . . . *Purchased*

——— Recueil de Coefficients et d'Equivalences. Rome, 1922 *Purchased*

International Labour Congress. Technical Survey of Agricultural Questions. Geneva, 1921 . . . . . . *Publishers*

Jeffery, J. A. Text Book of Land Drainage. 1921 . . *Publishers*

JOURNAL of Agricultural Research. Vols. I to XX. Washington, 1913–1921 . . . . *Publishers*

KERSEY, H. W. Farm Book-keeping. Ashford, 1920. . *Author*

LAING, Frederick. The Cockroach: Its Life-history, and How to Deal with It. London, 1921. . *Trustees of British Museum*

LEAKE, H. M. The Bases of Agricultural Practice in the United Provinces. Cambridge, 1921 . . . . . *Publishers*

LIVE Stock Defence Committee. Review of Report of Royal Commission on Importation of Live Stock. London, 1921. *Live Stock Defence Committee*

LONG, James. The Small Farm and its Management. Second Edition. London, 1920 . . . . . . *Publishers*

LYON, T. L. Soils and Fertilisers. New York, 1918 . . *Publishers*

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